Plant Maintenance EHS Manual

Incorporating the Operational Environmental Management Plan – Part 2 **Appendices**

Nyngan Solar Plant

Appendices

Appendix A – Signed HSE Policy

First Solar

SMP: 01 First Solar Health (Australia), Safety & Environmental Policy

First Solar is committed to creating a culture where HEALTH, SAFETY AND THE ENVIRONMENT is an integral part of all our employees and subcontractors daily lives, creating a better future for the world by being the HSE industry leader.

We will always conduct our business in a manner that protects the HEALTH AND SAFETY of every person on our sites and protects the ENVIRONMENT around us. We expect all personnel to undertake their work in a manner that does not place either themselves or their colleagues at risk.

We maintain a goal of zero workplace injuries, which is consistent with our vision and values that all workplace injuries are preventable.

To achieve this outcome we will:

- Conduct business in a manner that actively integrates the elements of the First Solar HEALTH, SAFETY AND ENVIRONMENTAL Management Systems into all aspects of our operations;
- Promote First Solar sustainability through ENIVRONMENTAL operational excellence, waste minimization, resource conservation and a world-class recycling program;
- Comply with all applicable laws, regulations and statutory obligations;
- Proactively identify and control HEALTH, SAFETY AND ENIVRONMENTAL hazards and risks in the workplace;
- Support employees, contractors and subcontractors in their decision to stop work and intervene when unsafe acts or conditions are identified;
- Enable First Solar to continuously improve the HEALTH, SAFETY AND ENVIRONMENTAL management systems and our HSE performance through open communication and consultation with employees, clients, subcontractors and visitors;
- Provide the necessary tools, resources and training to facilitate continuous improvement, ensure the objectives and targets derived from this policy are achieved thereby ensuring HSE excellence throughout First Solar operations;
- Maintain proactive leadership in the management of HEALTH, SAFETY AND THE ENVIRONMENT.

20/11/14

Endorsed By: Jack Curtis, Vice President APAC **Date**

Appendix B - Table 3-1 Nyngan Staging Report

Table 3-1 Project approval requirements for each nominated party.

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
Condition of consent							
	PART A - ADMINISTRATIVE CONDITIONS						
	Obligation to Minimise Harm to the Environment						
A1.	The Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may results from the construction, operation or decommissioning of the development.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
	Terms of consent						
A2.	The Applicant shall carry out the development generally in accordance with the: a) State Significant development Application SSD-5355; b) Nyngan Solar Plant Environmental Impact Statement prepared by nghenvironmental dated March 2013; c) Nyngan Solar Plant Submissions Report prepared by nghenvironmental dated June 2013; d) conditions of this consent.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
A3.	If there is any inconsistency between the plans and documentation referred to above, the most recent document shall prevail to the extent of the inconsistency. However, conditions of this consent prevail to the extent of any inconsistency.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
A4.	The Applicant shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of: a) any reports, plans or correspondence that are submitted in accordance with this consent; and b) the implementation of any actions or measures contained within these documents.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
	Staging						
A5.	The Applicant may elect to construct and/ or operate the development in stages. Where staging is proposed, the Applicant shall submit a	This condition is met by the					

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Staging Report to the Director-General prior to the commencement of the first proposed stage. The Staging Report shall provide details of: c) how the development would be staged, including general details of work activities associated with each stage and the general timing of when each stage would commence; and d) details of the relevant conditions of development consent, which would apply to each stage and how these shall be complied with across and between the stages of the development. Where staging of the development is proposed, these conditions of consent are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage(s). The Applicant shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Director-General prior to the commencement of each stage, identifying any changes to the proposed staging or applicable conditions.	development of this Staging Plan, once submitted to the NSW Minister for Planning and Infrastructure					
	Structural Adequacy						
A6.	The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.	Maintains ultimate responsibility for condition being met		Applicable	Applicable		
	Decommissioning						
A7.	Within one year of decommissioning, the site shall be returned, as far as practicable, to its condition prior to the commencement of construction in consultation with the relevant landowner. All solar panels and associated above ground structures including but not necessarily limited to, the control and facilities building and electrical infrastructure, including underground infrastructure to a depth of 300 millimetres, shall be removed from the site unless otherwise agreed by the Director-General in consultation with the relevant landowner, except where the, control room or overhead electricity lines are transferred to or in the control of the local electricity network operator. All other elements associated with the development, including site	Maintains ultimate responsibility for condition being met				Applicable	

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	roads, shall be removed unless otherwise agreed to by the Director-General.						
A8.	If the solar plant is not used for the generation of electricity for a continuous period of 12 months, it shall be decommissioned by the Applicant, unless otherwise agreed by the Director-General. The Applicant shall keep independently-verified annual records of the use of the solar panels for electricity generation. Copies of these records shall be provided to the Director-General upon request. The solar panels and any associated infrastructure are to be dismantled and removed from the site by the Applicant within 18 months from the date that the solar panels were last used to generate electricity.	Maintains ultimate responsibility for condition being met				Applicable	
A9.	Prior to the commencement of construction, the Applicant shall provide written evidence to the satisfaction of the Director-General that the lease agreements with the relevant landowners have adequate provisions to require that decommissioning occurs in accordance with this consent, and is the responsibility of the Applicant. This condition does not apply if the Applicant is the landowner.	Applicable, AGL owns the land					
	Compliance						
A10.	The Applicant shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
A11.	The Applicant shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
A12.	In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the development, either party may refer the matter to the Director-General for resolution. The Director-General's determination of any such dispute shall be final and binding on the parties.	Noted	Applicable	Applicable	Applicable	Applicable	Applicable
	PART B - ENVIRONMENTAL PERFORMANCE						
	GENERAL						

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Ancillary Facilities						
B1.	B1. Unless otherwise approved by the Director-General, the location of Ancillary Facilities shall: a) be located more than 50 metres from a waterway; b) be located within or adjacent to the Site; c) have ready access to the road network; d) be located to minimise the need for heavy vehicles to travel through residential areas; e) be sited on relatively level land; f) be separated from nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant); g) not require vegetation clearing beyond that already required by the development; h) not impact on heritage sites (including areas of archaeological sensitivity) beyond those already impacted by the development; i) not unreasonably affect the land use of adjacent properties; j) be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented; and k) provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours. The location of the Ancillary Facilities shall be identified in the CEMP.	Maintains ultimate responsibility for condition being met (Ancillary facilities are not considered construction under Schedule 1 of the conditions of consent)		Applicable	Applicable		
B2.	The site of all ancillary facilities shall be rehabilitated to at least their pre-construction condition, unless otherwise agreed by the relevant landowner.	Maintains ultimate responsibility for condition being met		Applicable	Applicable		
	Bushfire Risk						

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
B3.	The Applicant shall ensure that all development components on site are designed, constructed and operated to minimise ignition risks, provide for asset protection consistent with relevant NSW Rural Fire Services (RFS) design guidelines (Planning for Bushfire Protection 2006 and Standards for Asset Protection, Undated) and provide for necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.	Bushfire risk and consultation will managed through the implementation of Bush Fire Management Plans (BFMPs). Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage
B4.	Throughout the operational life of the development, the Applicant shall regularly consult with the local RFS to ensure its familiarity with the development, including the construction timetable and the final location of all infrastructures on the site. The Applicant shall comply with any reasonable request of the local RFS to reduce the risk of bushfire and to enable fast access in emergencies.	Maintains ultimate responsibility for condition being met				Applicable	Applicable
	Dangerous Goods						
B5.	Dangerous goods, as defined by the Australian Dangerous Goods Code, shall be stored and handled strictly in accordance with: a) all relevant Australian Standards; b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and c) the Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin (Environment Protection Authority, 1997). In the event of an inconsistency between the requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
	Dust Generation						

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
B6.	The Applicant shall construct and operate the development in a manner that minimises dust generation from the site, including wind-blown and traffic-generated dust as far as practicable. All development related activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should visible dust emissions attributable to the development occur during construction and operation, the Applicant shall identify and implement all practicable dust mitigation measures, including cessation of relevant works during construction, planting ground covers, using dust suppressants as appropriate, such that emissions of visible dust cease.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
	Water Quality Impact						
B7.	Except as may be expressly provided by an Environment Protection Licence for the development, the Applicant shall comply with section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
B8.	Works within 40m of a watercourse are to be carried out in accordance with the Guidelines for Controlled Activities on Waterfront Land (NOW, July 2012).	Guidelines for Controlled Activities on Waterfront Land will be included in the site specific erosion and sediment control plans AGL maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable		
	Construction Soil and Water Management						
B9.	Soil and water management measures consistent with Managing Urban Stormwater - Soils and Construction Vol. 1 (Landcom, 2004) shall be employed during the construction of the development to minimise soil	Maintains ultimate responsibility for	Applicable	Applicable	Applicable		

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	erosion and the discharge of sediment and other pollutants to land and/or waters.	condition being met					
	Waterways						
B10.	Waterway crossings shall be designed and constructed in consultation with NOW and DPI (Fisheries) and consistent with DPI (Fisheries) guidelines Policy and Guidelines for Fish Friendly Waterway Crossings (2004) and Fish Passage Requirements for Waterway Crossings (2004).	Waterway crossings will be included in site specific erosion and sediment control plans AGL maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable		
	Waste Management						
B11.	All waste materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
B12.	Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
B13.	All liquid and/or non-liquid waste generated on the site shall be assessed and classified in accordance with Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2009), or any superseding document.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable	Applicable	Applicable
	Utilities and Services						
B14.	Utilities, services and other infrastructure potentially affected by construction and operation shall be identified prior to construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of	Maintains ultimate responsibility for	Applicable	Applicable	Applicable		

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	services that are likely to be affected by the development shall be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The cost of any such arrangements shall be borne by the Applicant.	condition being met					
	FLORA & FAUNA						
	Native Vegetation Impacts						
B15.	The clearing of all native vegetation is to be limited to the minimal extent practicably required. Details regarding the procedures for clearing vegetation and minimising the extent of clearing shall be clearly included in the Flora and Fauna Management Plan contained in condition C3(a).	Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		
B16.	Tree trunks and major branches from cleared trees should be used, to the fullest extent practicable, to enhance habitat (coarse woody debris) in rehabilitated areas (either in offset areas or areas adjoining impacted areas) and included in the Construction Flora and Fauna Management Plan contained in condition C3(a).	Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		
	Fauna Impacts						
B17.	The Applicant shall design, construct and operate any overhead transmission line connection to the electricity grid with consideration to reasonable and feasible mitigation measures that can be employed to minimise the risk of bird and bat strike into electricity wires.	Maintains ultimate responsibility for condition being met			Applicable		Applicable
	VISUAL AMENITY						
	Landscaping Requirements						
B18.	Within six months of the commissioning of the development, the Applicant shall prepare and submit a Visual Impact Verification Report for the Director-General's approval. Unless otherwise agreed to by the Director-General, the Visual Impact Verification Report shall confirm the visual impacts at each of the receptors and roadways identified in the Environmental Impact Statement, or subsequently identified in the final design work, as having the potential to be 'highly impacted', considering the final model and layout of generating components on site as well as site specific mitigating factors at the receptors and roadways (such as receptor orientation and intervening screening factors). The Visual Impact Verification Report shall identify all reasonable and feasible screening and landscape planting options	Maintains responsibility for preparing a single report to satisfy this condition					

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	available at each receptor and roadways at which potential impacts have been verified to be 'high' including demonstration that these measures have been determined in consultation with affected receptors and relevant road authorities.						
B19.	Within 18 months of the approval of the Visual Impact Verification Report by the Director-General (or as otherwise agreed to by the Director-General), the Applicant shall ensure that the measures identified in the Report are implemented at affected receptors and roadways as identified in the Report in consultation with the relevant residents/landowners and road authorities.	Maintains ultimate responsibility for condition being met					
B20.	The Applicant shall ensure that any permanent buildings and overhead transmission lines are designed and constructed to minimise visual intrusion to nearest sensitive receptors as far as reasonable and feasible, including appropriate external finishes and landscape planting to screen views.	Maintains ultimate responsibility for condition being met		Applicable	Applicable		
	Rehabilitation and Revegetation						
B21.	The Applicant shall implement a revegetation and rehabilitation program for all areas of the development footprint which are disturbed during the construction of the development but which are not required for the ongoing operation of the development including temporary construction facility sites and sections of construction access roads. The Applicant shall ensure that all revegetation measures are implemented progressively where possible and in all cases within six months of the cessation of construction activities at the relevant area. Unless otherwise agreed to by the Director-General, the Applicant shall monitor and maintain the health of all revegetated areas until such time that the plantings have been verified by an independent and suitably qualified expert (whose appointment has been agreed to by the Director-General) as being well established, in good health and self sustaining.	Overarching guidelines will be prepared by AGL to satisfy this condition	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		
	NOISE - CONSTRUCTION						
	Construction Noise						
B22.	B22. Construction activities associated with the development shall be undertaken during the following standard construction hours: a) 7:00am to 6:00pm Mondays to Fridays, inclusive; b) 8:00am to 1:00pm Saturdays; and	Maintains ultimate responsibility for	Applicable	Applicable	Applicable		

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	c) at no time on Sundays or public holidays. Except unless otherwise provided in condition B23.	condition being met					
B23.	Construction works outside of the standard construction hours identified in condition B22 may be undertaken in the following circumstances: a) construction works that generate noise that is: i. no more that 5 dB(A) above rating background level at any residence in accordance with the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009); and ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) at other sensitive receivers; or b) for the delivery of materials required outside those hours by the NSW Police Force or other authorities for safety reasons; or c) where it is required in an emergency to avoid the loss of life, property and/or to prevent environmental harm; d) works as approved through the out-of-hours work protocol outlined in the Construction Noise Management Plan required under condition C3(d).	Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		

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B24.	Any activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken: a) between the hours of 8:00 am to 5:00 pm Mondays to Fridays; b) between the hours of 8:00 am to 1:00 pm Saturdays; and c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition, 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.	Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		
B25.	The Applicant shall implement all reasonable and feasible measures to minimise noise generation from the construction of the development consistent with the requirements of the Interim Construction Noise Guideline (DECC, July 2009) including noise generated by heavy vehicle haulage and other construction traffic associated with the development	Maintains ultimate responsibility for condition being met	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage	A subplan will be developed specific to this stage		
	NOISE - OPERATION						
	Operational Noise Criteria						
B26.	The Applicant shall take all reasonable measures to minimise noise emissions and vibration from all plant and equipment operated on the site such that they do not exceed noise and vibration criteria derived by application of the NSW Industrial Noise Policy (DECC, 2000) and Assessing Vibration: A Technical Guideline (DECC, 2006).	Maintains ultimate responsibility for condition being met				A subplan will be developed specific to this stage	A subplan will be developed specific to this stage
	Operational Noise Design Standards – Overhead Transmission Line						
B27.	The Applicant shall ensure that any overhead transmission line associated with the development is designed, constructed and operated to minimise the generation of corona and aeolian noise as far as reasonable and feasible at nearest existing sensitive receptors.	Maintains ultimate responsibility for condition being met			A subplan will be developed specific to this stage		A subplan will be developed specific to this stage
	TRAFFIC AND TRANSPORT						
	Road Dilapidation						
B28.	B28. Unless otherwise agreed by the Director-General, the Applicant shall commission an independent, qualified person or team	One overarching plan will be					

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	to undertake the following in consultation with the relevant road authority: a) Prior to the commencement of construction of the development, the Applicant shall commission a suitably qualified road infrastructure specialist to assess the condition of all local public roads proposed to be traversed by construction traffic associated with the development (including over-mass or over-dimensional vehicles) in consultation with the relevant road authority, and to identify any upgrade requirements to accommodate development traffic for the duration of construction (including culvert, bridge and drainage design; intersection treatments; vehicle turning requirements; and site access), having regard to traffic volumes. The Pre-Construction Road Report shall be submitted to the Director-General prior to the commencement of construction works, clearly identifying recommendations made by the relevant road authority and how these have been addressed. The Applicant shall ensure that all upgrade measures identified in the report are implemented to meet the reasonable requirements of the relevant road authority, prior to the commencement of construction, and at no cost to the relevant road authority; b) upon determining the haulage route(s) for construction vehicles associated with the development, and prior to construction, an independent and qualified person or team shall undertake a Road Dilapidation Report. The report shall assess the current condition of relevant local road(s) and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the development. The Report shall be submitted to the relevant road authority for review prior to the commencement of haulage;	prepared by AGL to satisfy this condition					

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
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	c) following completion of construction, a subsequent report shall be prepared to assess any damage that may have resulted from the construction of the development; and d) measures undertaken to restore or reinstate roads affected by the development shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Applicant.						
B29.	The intersection of the site access road and the Barrier Highway shall be upgraded prior to the commencement of construction to the satisfaction of the RMS and at no cost to the relevant road authority.	Maintains ultimate responsibility for condition being met	Applicable				
	HERITAGE						
	Heritage Impacts						
B30.	If during the course of construction the Applicant becomes aware of any previously unidentified Aboriginal object(s), all work likely to affect the object(s) shall cease immediately and the OEH informed in accordance with the National Parks and Wildlife Act 1974. In addition, registered Aboriginal stakeholders shall be informed of the finds. Works shall not recommence until an appropriate strategy for managing the objects has been determined in consultation with the OEH and the registered Aboriginal stakeholders and written authorisation from the OEH is received by the Applicant.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable		
B31.	If during the course of construction the Applicant becomes aware of any unexpected historical relic(s), all work likely to affect the relic(s) shall cease immediately and the Heritage Office notified in accordance with the Heritage Act 1977. Works shall not recommence until the Applicant receives written authorisation from the Heritage Office.	Maintains ultimate responsibility for condition being met	Applicable	Applicable	Applicable		
	EASEMENT						
B32.	An easement over the affected part of Lot 7300 DP1156652, with compensation payable to the Crown under the provisions of the Land Acquisition (Just Terms Compensation) Act 1991, is to be created prior to commencement of energy generation at the site.	Maintains ultimate responsibility for condition being met					

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	FENCING						
B33.	The Applicant shall consult with the relevant landowner(s) adjoining the access road (inclusive of the owner of the property known as "Redlands" who utilises the adjoining road reserve) regarding any additional fencing required along the site access road to ensure any livestock is protected from collision risks. Unless otherwise agreed by the Director-General, the Applicant must install a stock proof fence along the western boundary of Lot 24 DP 751328, or implement other feasible means of protecting livestock from collision risks, where required by the relevant landowner, prior to construction, at the full cost of the Applicant.	Maintains ultimate responsibility for condition being met	Applicable				
	PART B - ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING						
	ENVIRONMENTAL REPRESENTATIVE						
C1.	Prior to the commencement of construction of the development, or as otherwise agreed by the Director-General, the Applicant shall nominate for the approval of the Director-General a suitably qualified and experienced Environment Representative(s) that is independent of the design and construction personnel. The Applicant shall employ the Environmental Representative(s) for the duration of construction, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall: a) be the principal point of advice in relation to the environmental performance of the development; b) monitor the implementation of environmental management plans and monitoring programs required under this consent and advise the Applicant upon the achievement of these plans/ programs; c) have responsibility for considering and advising the Applicant on matters specified in the conditions of this consent, and other licences and approvals/consents related to the environmental performance and impacts of the development;	One ER would be appointed to the project to satisfy this condition as well as provide coordination between the stages, in terms of compliance					

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	d) ensure that environmental auditing is undertaken in accordance with the Applicant's Environmental Management System(s); e) be given the authority to approve/ reject minor amendments to the Construction Environmental Management Plan. What constitutes a "minor" amendment shall be clearly explained in the Construction Environmental Management Plan required under Condition C2; f) be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur; and g) be consulted in responding to the community concerning the environmental performance of the development where the resolution of points of conflict between the Applicant and the community is required.						
	ENVIRONMENTAL MANAGEMENT						
	Construction Environmental Management Plan (CEMP)						
C2.	The Applicant shall prepare and implement a Construction Environmental Management Plan in consultation with Council in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004) or any replacement guideline. No construction associated with the development shall commence until written approval of this plan has been received from the Director-General or his nominee. The Plan must include: a) a description of all relevant activities to be undertaken on the site during construction including an indication of stages of construction, where relevant; b) identification of the potential for cumulative impacts with other construction activities	Maintains ultimate responsibility for ensuring that the contents of individual contractor CEMPs are able to satisfy this condition	Refer to Section 2.1	A CEMP will be developed specific to this stage	A CEMP will be developed specific to this stage		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	occurring in the vicinity and how such impacts would be managed; c) details of any construction sites and mitigation, monitoring, management and rehabilitation measures specific to the site compound(s) that would be implemented; d) statutory and other obligations that the Applicant is required to fulfil during construction including all relevant approvals/consents, consultations and agreements required from authorities and other stakeholders, and key legislation and policies; e) evidence of consultation with relevant public authorities required under this condition and how issues raised by the agencies have been addressed in the plan; f) a description of the roles and responsibilities for all relevant employees involved in the construction of the development including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of consent; g) details of how the environmental performance of construction will be monitored, and what actions will be taken to address identified potential adverse environmental impacts; h) specific consideration of relevant measures identified in the documents referred to under conditions A2b) and A2c) of this consent; i) the additional requirements of this consent; j) a complaints handling procedure during construction identified in conditions C13 and C14; k) register of construction work hazards and the anticipated level of risk associated with each;						

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	l) measures to monitor and manage soil and water impacts in consultation with NOW including: control measures for works close to or involving waterway crossings (including rehabilitation measures following disturbance and monitoring measures and completion criteria to determine rehabilitation success), identification of construction activities that are likely to pose a risk of groundwater interference, and procedures for managing groundwater impacts should they occur; m) measures to monitor and manage flood impacts in consultation with NOW; n) measures to monitor and manage dust emissions including dust generated by traffic on unsealed public roads and unsealed internal access tracks; o) emergency management measures including measures to control bushfires; p) information on water sources, including details on sources and security of water supply and water use on site; q) the Proponent shall ensure that it has sufficient water for all stages of the project, and if necessary, include the provision for a replacement dam. Details for any replacement dam must be prepared in consultation with OEH and NOW and submitted to the Director−General for approval prior to developing the dam; and r) incorporation of the plans identified in C3.						
C3.	As part of the Construction Environmental Management Plan required under condition C2 of this consent, the Applicant shall prepare and implement the following: a) a **Flora and Fauna Management Plan**, developed in consultation with the OEH, to outline measures to protect and minimise loss of native vegetation and native fauna habitat as a result of construction of	Maintains ultimate responsibility for ensuring that the contents of individual contractor	Refer to Section 2.1	Subplans will be developed specific to this stage	Subplans will be developed specific to this stage		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	the development. The Plan shall include, but not necessarily be limited to: i. plans showing terrestrial vegetation communities; important flora and fauna habitat areas; locations of EECs, native pasture; and areas to be cleared. The plans shall also identify vegetation adjoining the site where this contains important habitat areas and/or threatened species, populations or ecological communities; ii. methods to manage impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the development, such as location of fencing, procedures for vegetation clearing or soil removal/stockpiling, procedures for rehabilitation of directly impacted native vegetation (where appropriate) and procedures for enhancing native habitat (such as re-locating hollows or installing nesting boxes and managing weeds); iii. procedures to accurately determine the total area, type and condition of vegetation community to be cleared; and iv. a procedure to monitor the effectiveness of flora and fauna management, and review management methods where they are found to be ineffective. b) a **Ground Cover Management Plan**, developed in consultation with an agronomist, to outline measures to ensure adequate vegetation cover and composition beneath the solar PV array. The Plan shall include, but not necessarily be limited to:	subplans are able to satisfy this condition					

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	i. procedures to minimise disturbance to ground cover not impacted by the development; ii. procedures for the stabilisation, rehabilitation and revegetation of disturbed ground cover including reference to field trials where required; iii. weed management measures to control and prevent the spread of noxious weeds; iv. monitoring methods to assess the impact of the development on the ground cover vegetation; and v. a procedure to review management methods where they are found to be ineffective. c) a **Landscape Plan**, to minimise visual impacts from the solar plant. The Plan shall include, but not necessarily be limited to: i. identification of landscaping objectives and standards based on visual impacts; ii. details of species used to enhance, mitigate and/or augment landscaping to minimise the visual impact of the development, particularly with respect to the impacts on nearby residences; iii. implementation, management and monitoring strategies to ensure the establishment and ongoing maintenance of landscaped areas; and iv. a consultation strategy to seek feedback from affected residents and the interested community on the proposed landscape measures. d) a **Construction Noise Management Plan** to manage noise impacts during construction and to identify all feasible and reasonable noise mitigation measures.						

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	The Plan shall include, but not necessarily be limited to: i. details of construction activities and an indicative schedule for construction works; ii. identification of construction activities that have the potential to generate noise impacts on surrounding land uses, particularly residential areas; iii. detail the requirements for Noise Impact Statement(s) for discrete work areas, including construction site compounds; iv. detail what reasonable and feasible actions and measures would be implemented to minimise noise impacts; v. procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity, as well as procedures for dealing with and responding to noise complaints; vi. an out-of-hours work (OOHW) protocol for the assessment, management and approval of works outside of standard construction hours as defined in condition B22 of this consent, including a risk assessment process under which an Environmental Representative may approve out-of-hour construction activities deemed to be of low environmental risk and refer high risk works for the Director-General's approval. The OOHW protocol shall detail standard assessment, mitigation and notification requirements for high and low risk out-of-hour works, and detail a standard protocol for referring						

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	applications to the Director-General; and vii. a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported; and, if any exceedance is detected how any non-compliance would be rectified. e) a **Traffic Management Plan** to manage traffic conflicts that may be generated during construction. In preparing the Plan, the Applicant shall consult with the Council and RMS. The Plan shall address the requirements of the relevant road authority and shall include, but not necessarily be limited to: i. the origin, number, size, frequency and final destination of vehicles entering/exiting the site; ii. loads, weights and lengths of haulage and construction related vehicles and the number of movements of such vehicles; iii. the management and coordination of the movement of construction and personnel vehicles to the site and measures to limit disruption to other motorists, emergency vehicles and school bus timetables (particularly the Miandetta to Nyngan route); iv. scheduling of haulage vehicle movement to minimise convoy length or platoons. Consideration should be given to minimise the route length for road						

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	transport of al size and over mass loads to minimise the impact on traffic. v. details of intersection improvement works in accordance with Austroads Guide to Road Design 2010 and RMS Supplements; vi. demonstration that all statutory responsibilities with regard to road traffic impacts have been complied with; vii. details of measures to minimise interactions between the development and other users of the roads such as the use of fencing, lights, barriers, traffic diversions etc; viii. procedures to manage construction traffic to ensure the safety of the school bus and its passengers, inclusive of driver training and procedures to ensure the adequacy of the management measures; ix. implement all reasonable and feasible measures to reduce the construction related traffic on the Barrier Highway and public roads between the site and the highway; x. schedule construction vehicle movements on site to occur outside school bus hours; xi. procedures to manage construction traffic to ensure the safety of livestock and to minimise disruption to livestock; xii. speed limits to be observed along routes to and from the site and within the site and access road; and xiii. details of the expected behavioural requirements for vehicle drivers						

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	travelling to and from the site and within the site. f) an **Aboriginal Heritage Plan** to monitor and manage Aboriginal heritage shall be developed in consultation with the OEH and registered Aboriginal stakeholders, and include the following: i. details of further archaeological investigations and/or salvage measures to be carried out prior to construction; ii. procedures for the management of identified objects within the development site; iii. procedures for dealing with unidentified objects and/or human remains; iv. Aboriginal cultural heritage induction processes for construction personnel; and v. procedures for ongoing Aboriginal consultation and involvement. Upon receipt of the Director-General's approval, the Applicant shall provide a copy of the Plan to the relevant landowner as soon as practicable.						
	Operational Environmental Management Plan						
C4.	The Applicant shall prepare and implement an Operational Environmental Management Plan in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004), or any replacement guideline. The Plan shall include but not necessarily be limited to: a) identification of all statutory and other obligations that the Applicant is required to fulfil in relation to the operation of the development, including all consents, licences, approvals and consultations; b) a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the development;	Maintains ultimate responsibility for ensuring that the contents of individual contractor OEMPs are able to satisfy this condition				An OEMP will be developed specific to this stage	An OEMP will be developed specific to this stage

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	c) overall environmental policies to be applied to the operation of the development; d) standards and performance measures to be applied to the development, and means by which environmental performance can be periodically monitored, reviewed and improved, (where appropriate) and what actions would be taken in the case that non-compliance with the requirements of this consent are identified. In particular the following environmental performance issues shall be addressed: i. bushfire hazard and risk management; ii. management and maintenance of offsets; iii. inspection, monitoring and maintenance of all watercourse crossings; iv. management measures for the site, including management of vegetation, soil erosion, dust weed control and landholder liaison. e) the environmental monitoring requirements outlined under this consent; f) measures to monitor and manage flood impacts in consultation with NOW; g) information on water sources, including details on sources and security of water supply and water use on site; h) complaints handling procedures as identified in conditions C13 to C15; i) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A2b) and A2c) of this consent; and j) management policies to ensure that environmental performance goals are met and comply with the conditions of this consent.						

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of Operation of the development or within such period as otherwise agreed by the Director-General. Operation shall not commence until written approval has been received from the Director-General. Upon receipt of the Director-General's approval, the Applicant shall make the Plan publicly available as soon as practicable and provide a copy of the Plan to the relevant landowner as soon as practicable.						
	Biodiversity Offset Management Package						
C5.	Following final design and prior to the commencement of construction, or as otherwise agreed to by the Director-General, the Applicant shall develop and submit a Biodiversity Offset Management Package for the approval of the Director-General. The package shall detail how the ecological values lost as a result of the development will be offset. The Biodiversity Offset Management Package shall be developed in consultation with the OEH and shall (unless otherwise agreed by the Director-General) include, but not necessarily be limited to: a) an assessment of all native vegetation communities and threatened species habitat, supported by a suitable metric (such as the Biobanking Assessment Methodology), that will either be directly or indirectly impacted by the proposal; b) the objectives and biodiversity outcomes to be achieved (including 'improve or maintain' biodiversity values), and the adequacy of the proposed offset considered; c) the final suite of the biodiversity offset measures selected and secured including but not necessarily limited to; i. an offset proposal which is supported by a suitable metric method (such as the Biobanking Assessment Methodology); ii. details of the relative condition and values of communities on the offset site in comparison to those to be impacted; iii. proposed management actions and expected gains;	Maintains responsibility for preparing a single package to satisfy this condition					

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	d) the monitoring requirements for compensatory habitat works and other biodiversity offset measures proposed to ensure the outcomes of the package are achieved, including: i. the monitoring of the condition of species and ecological communities at offset locations; ii. the methodology for the monitoring program(s), including the number and location of offset monitoring sites, and the sampling frequency at these sites; iii. provisions for the annual reporting of the monitoring results for a set period of time as determined in consultation with the OEH; and e) timing and responsibilities for the implementation of the provisions of the Package. Land offsets shall be consistent with the Principles for the use of Biodiversity Offsets in NSW (NSW Office of Environment and Heritage, June 2011). Any land offset shall be enduring and be secured by a conservation mechanism which protects and manages the land in perpetuity. Where land offsets cannot solely achieve compensation for the loss of habitat, additional measures shall be provided to collectively deliver an improved or maintained biodiversity outcome for the region. Where monitoring referred to in condition (d) indicates that biodiversity outcomes are not being achieved, remedial actions shall be undertaken to ensure that the objectives of the Biodiversity Offset Package are achieved.						
	Decommissioning Management Plan						
C6.	Prior to the commencement of decommissioning, or as otherwise agreed by the Director-General, the Applicant shall prepare (in consultation with the relevant landowner) and implement (following approval) a Decommissioning Management Plan for the development. The Plan shall outline the environmental management practices and procedures that are to be followed during decommissioning, and shall be prepared in consultation with the relevant agencies and in	Maintains responsibility for preparing a single plan to satisfy this condition					

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004) or any replacement guideline. The Plan shall include, but not necessarily be limited to: a) a description of activities to be undertaken during decommissioning of the development (including staging and scheduling); b) statutory and other obligations the Applicant is required to fulfil during decommissioning, including approval/consents, consultations and agreements required from authorities and other stakeholders under key legislation and policies; c) a description of the roles and responsibilities for relevant employees involved in the decommissioning of the development, including relevant training and induction provisions for ensuring that employees, including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of consent; d) an environmental risk analysis to identify the key environmental performance issues associated with the decommissioning phase; and e) details of how environmental performance will be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the decommissioning of the development). In particular, the following environmental performance issues shall be addressed in the Plan: i. compounds and ancillary facilities management; ii. noise and vibration; iii. traffic and access;						

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	iv. soil and water quality and spoil management; v. air quality and dust management; vi. hazardous material and waste management; and vii. hazard and risk management, including bushfire risk. The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of decommissioning, or as otherwise agreed by the Director-General. The Plan may be prepared in stages, however, decommissioning works shall not commence until written approval has been received from the Director-General. Upon receipt of the Director-General's approval, the Applicant shall provide a copy of the Plan to the relevant landowner as soon as practicable.						
	Decommissioning Road Dilapidation						
C7.	Unless otherwise agreed by the Director-General, the Applicant shall commission an independent, qualified person or team to undertake the following in consultation with the relevant road authority: a) Prior to the commencement of decommissioning of the development, the Applicant shall commission a suitably qualified road infrastructure specialist to assess the condition of all public roads proposed to be traversed by decommissioning traffic associated with the development (including over-mass or over-dimensional vehicles) in consultation with the relevant road authority, and to identify any upgrade requirements to accommodate development traffic for the duration of decommissioning (including culvert, bridge and drainage design; intersection treatments; vehicle turning requirements; and site access), having regard to traffic volumes. The Decommissioning Road Report shall be submitted to the Director-General prior to the commencement of decommissioning works, clearly identifying	Maintains responsibility for preparing a single plan to satisfy this condition					

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	recommendations made by the relevant road authority and how these have been addressed. The Applicant shall ensure that all upgrade measures identified in the report are implemented to meet the reasonable requirements of the relevant road authority, prior to the commencement of decommissioning, at no cost to the relevant road authority. b) upon determining the haulage route(s) for decommissioning vehicles associated with the development, and prior to decommissioning, an independent and qualified person or team shall undertake a Road Dilapidation Report. The report shall assess the current condition of the road(s) and describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the development. The Report shall be submitted to the relevant road authority for review prior to the commencement of haulage. Following completion of decommissioning, a subsequent report shall be prepared to assess any damage that may have resulted from the decommissioning of the development. Measures undertaken to restore or reinstate roads affected by the development shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant road authority, and at the full expense of the Applicant.						
	REPORTING						
	Incident Reporting						
C8.	The Applicant shall notify, at the earliest opportunity, the Director-General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the development, the Applicant shall notify the Director-General and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant shall provide the Director-General and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Maintains responsibility for reporting to satisfy this condition	Incident reporting protocols will be developed specific to this stage	Incident reporting protocols will be developed specific to this stage	Incident reporting protocols will be developed specific to this stage	Incident reporting protocols will be developed specific to this stage	Incident reporting protocols will be developed specific to this stage

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	Regular Reporting						
C9.	The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	Maintains responsibility for reporting to satisfy this condition	Applicable	Applicable	Applicable	Applicable	Applicable
	COMMUNITY						
	Community Information, Consultation and Involvement						
C10.	Subject to reasonable confidentiality requirements, the Applicant shall make all documents required under this consent available for public inspection on request.	Maintains responsibility for addressing this condition					
	Provision of Electronic Information						
C11.	Prior to the commencement of construction, the Applicant shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the development. The Applicant shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to: a) the status of the development; b) a copy of this consent and any future modification to this consent; c) a copy of each relevant environmental consent, licence or permit required and obtained in relation to the development; d) a copy of each plan, report, or monitoring program required by this consent; and e) details of the outcomes of compliance reviews and audits of the development.	Maintains responsibility for addressing this condition					
	Community Information Plan						
C12.	Prior to the commencement of construction, the Applicant shall prepare and implement a Community Information Plan which sets out the community communication and consultation processes to be implemented during construction and operation of the development. The Plan shall include but not be limited to:	A Community Consultation Plan would be developed to address this and					

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	a) procedures to inform the local community of planned investigations and construction activities, including blasting works (if any); b) procedures to inform the relevant community of construction traffic routes and any potential disruptions to traffic flows and amenity impacts; c) procedures to consult with local landowners/residents with regard to construction traffic to ensure the safety of livestock and to limit disruption to livestock movements; d) procedures to inform the community where work outside the construction hours specified in condition B22, in particular noisy activities, has been approved; and e) procedures to inform and consult with the relevant landowner to rehabilitate impacted land.	other issues related to the community. The Applicant maintains responsibility for preparing and implementing this plan to satisfy this condition.					
	Complaints Procedure						
C13.	Prior to the commencement of construction, the Applicant shall ensure that the following are available for community complaints for the life of the development (including construction and operation) or as otherwise agreed by the Director-General: a) a 24 hour telephone number on which complaints about construction and operational activities at the site may be registered; b) a postal address to which written complaints may be sent; and c) an email address to which electronic complaints may be transmitted. The telephone number, postal address and e-mail address shall be advertised in a newspaper circulating in the local area on at least one occasion prior to the commencement of construction; and at six-monthly intervals during construction and for a period of two years following commencement of operation of the development. These details shall also be provided on the Applicant's internet site required by condition C11. The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the construction site(s), in a position that is clearly visible to the public.	Maintains responsibility for addressing this condition					

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C14.	The Applicant shall record details of all complaints received through the means listed in condition C13 of this consent in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to: d) the date and time, of the complaint; e) the means by which the complaint was made (telephone, mail or email); f) any personal details of the complainant that were provided, or if no details were provided, a note to that effect; g) the nature of the complaint; h) any action(s) taken by the Applicant in relation to the complaint, including timeframes for implementing the action; and i) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken. The Complaints Register shall be made available for inspection by the Director-General upon request.	One complaints strategy will be developed by AGL and implemented throughout each stage to address this condition.	Applicable. Required to provide information to Applicant	Applicable. Required to provide information to Applicant	Applicable. Required to provide information to Applicant	Applicable	Applicable
C15.	The Applicant shall provide an initial response to any complaints made in relation to the development during construction or operation within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in accordance with condition C14. Any subsequent detailed response or action is to be provided within two weeks.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
	COMPLIANCE						
	Compliance Tracking Program						
C16.	Prior to the commencement of construction, the Applicant shall develop and implement a Compliance Tracking Program, to track compliance with the requirements of this consent during the construction and operation of the development and shall include, but not necessarily be limited to: a) provisions for periodic reporting of compliance status to the Director-General including at least prior to the commencement of construction of the development, prior to the commencement of	Maintains responsibility for addressing this condition	Compliance tracking would be undertaken for relevant conditions	Compliance tracking would be undertaken for relevant conditions	Compliance tracking would be undertaken for relevant conditions	Compliance tracking would be undertaken for relevant conditions	Compliance tracking would be undertaken for relevant conditions

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
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	operation of the development and within two years of operation commencement; b) a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing; c) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance; d) mechanisms for recording environmental incidents and actions taken in response to those incidents; e) provisions for reporting environmental incidents to the Director-General during construction and operation; and f) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.						
	Statement of commitment						
1.	A supplementary survey during spring (early October) prior to the finalisation of the transmission line design would be conducted to confirm if threatened flora species including the Red-darling Pea and Pine Donkey Orchid inhabit the higher quality woodland vegetation south of the Barrier Highway. If these species are identified in areas proposed for impact, transmission infrastructure would be microsited with input from an ecologist to ensure a significant impact is avoided. If unavoidable, all areas of suitable habitat within the easement would be included as additional permanent impact areas and would be added to the total area required to be offset.	Maintains responsibility for addressing this condition					
2.	Grey-crowned Babbler nest sites identified in Figure 4-7 of the Biodiversity Assessment would be protected from impact during infrastructure siting and design process.	Maintains responsibility for addressing this condition		Applicable			
3.	Pre-clearance surveys would be conducted prior to felling hollow-bearing trees.	Maintains responsibility for	Applicable	Applicable	Applicable		

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		addressing this condition					
4.	Works would avoid impacts to mature trees that are to be retained. Tree protection standards would comply with Australian standard AS 4970-2009 *Protection of trees on development sites* (Standards Australia, 2009). Wherever practicable, excavations and vehicle/machinery movements would occur outside the canopy dripline of large eucalypts.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
5.	Removal of the east-west strip of vegetation must be conducted outside of the breeding season of the Grey-crowned Babbler (June to February) unless the nests have been confirmed to be inactive.	Maintains responsibility for addressing this condition		Applicable			
6.	Restoration of habitat: Hollows from felled hollow-bearing trees would be salvaged and placed in retained trees or on poles in adjacent habitat. For each hollow salvaged, a nest box would also be installed to offset the loss of habitat. Where it is not deemed to be a fire hazard, timber from cleared trees (coarse woody debris – CWD – including logs) is to be relocated into areas of adjacent woodland to provide foraging habitat for species such as Grey-crowned Babblers and other ground dwelling fauna. CWD would be scattered evenly across the relocation areas, not piled or windrowed. Cleared native vegetation not likely to provide habitat would be mulched rather than burned.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
7.	Within areas of native vegetation, existing tracks would be used wherever possible to avoid compaction and/or disturbance.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
8.	Traffic management measures would be incorporated into the construction and operation phase and would address traffic flow, vehicle speed and vehicle numbers entering and leaving the site. This would aim to prevent collisions with fauna utilising the site, particularly Grey-crowned Babblers.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
9.	Excavated topsoil would be stored separately from subsoil and replaced in a manner that replicates the original profile as closely as possible to assist rapid revegetation.	Maintains responsibility for	Applicable	Applicable	Applicable		

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		addressing this condition					
10.	Site stabilisation, rehabilitation and revegetation would be undertaken progressively during works, to ensure that soils are stabilised as soon as practical. This would minimise weed infestation, sedimentation and erosion, which degrade habitat.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
11.	Disturbed areas would be identified and used preferentially for vehicle and machinery access, materials laydown, stockpiling of cleared vegetation and the deposition and retrieval of spoil whenever practicable, to minimise the footprint of the development on intact native-dominated areas.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
12.	A weed management plan would be developed for the site, guided by the measures set out in the Biodiversity Assessment.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
13.	Perimeter security fencing will feature heavy duty fabric to increase visibility to fast flying parrots.	Maintains responsibility for addressing this condition		Applicable	Applicable		
14.	Where trenches are to be excavated and backfilled in well vegetated native areas, whole sods would be removed, stored in moist, shaded conditions and replaced following the works. Sod storage time would be minimised and sods would be replaced in a manner that maximises the chances of re-establishment and soil stabilisation.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
15.	If the dam in the south of the solar plant site is removed during the works, an alternative watering point would not be established on the proposal site.	Maintains responsibility for addressing this condition		Applicable			
16.	Trenches would be left open for the least time practical and would be inspected for trapped fauna prior to back filling. Any trench sections left open overnight would be inspected early in the morning and any trapped fauna removed.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
17.	A groundcover management plan would be developed, as outlined in the Biodiversity Assessment.	Maintains ultimate responsibility for ensuring that the	Applicable	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
		contents of individual contractor subplans are able to satisfy this condition					
18.	The space between the PV array rows would be kept clear to enable access by vehicles for ongoing weed control, and pasture renovation, if required.	Maintains responsibility for addressing this condition		Applicable			
19.	Nest boxes and salvaged hollows remounted during the construction phase would be routinely inspected to check the integrity of the structures and remedy them if required.	Maintains responsibility for addressing this condition		Applicable	Applicable		
20.	Areas of native vegetation that were impacted by the proposal would be rehabilitated to a level that demonstrates an increase in the environmental values of the site compared to its pre-operational state. A rehabilitation plan would be prepared that includes ongoing monitoring to ensure native vegetation rehabilitation is successful for the long-term. The plan would be developed prior to decommissioning and would be developed in partnership with relevant government agencies.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
21.	An Offset Plan would be developed with input from OEH and the CMA and according to the strategy provided in Appendix G of the Biodiversity Assessment. It would be finalised prior to any construction impacts, as outlined in the Biodiversity Assessment. The objective of offsetting is to ensure that an overall 'maintain or improve' outcome is met for the project; where impacts cannot be avoided, or sufficiently minimised, the residual impact would be offset in perpetuity.	Maintains responsibility for preparing a single package to satisfy this condition					
22.	Prior to finalising the Offset Site boundaries, the proponent would validate the area impacted by construction to ensure that the actual, not estimated, impacted area is offset.	Maintains responsibility for satisfying this condition					
23.	The offset site management actions and their outcomes would be reported every two years to the Department of Planning and	Maintains responsibility for					

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Infrastructure for the duration of the project (up to 30 years) to demonstrate that a 'maintain or improve' outcome has been met.	satisfying this condition					
	Aboriginal heritage						
24.	If human skeletal remains are found during the activity, work in the area of the remains would stop immediately, the area would be secured to prevent unauthorised access and the NSW Police and OEH would be contacted.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
	Hydrology (surface and groundwater)						
25.	The substation and office building would be designed to accommodate a 1:100 year flood and be located in the south-west of the site, outside the inundation zone (Figure 6-1 of the EIS).	Maintains responsibility for addressing this condition		Applicable	Applicable		
	Noise amenity						
26.	The employee and contractor induction would inform all site personnel about noise management measures, construction hours and nearest sensitive receivers.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
27.	All employees are responsible for managing noise from their work activities and working in a manner to reduce noise.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
28.	Works are to be carried out during standard work hours (i.e., 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any construction outside of these normal working hours would only be undertaken with prior approval from relevant authorities. For works outside standard hours, inform affected residents and other sensitive land use occupants between 5 and 14 days before commencement.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
29.	Where reasonable and feasible, noisy activity would be carried out in the least sensitive time periods (to be determined through community consultation).	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
30.	A Construction Noise Management Plan would be prepared as part of the Construction Environmental Management Plan. It would include provision for noise monitoring to be undertaken in the event a noise complaint is received to verify if target noise levels are exceeded at	Maintains ultimate responsibility for ensuring that the	Refer to Section 2.1	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	that receiver. If so, additional measures would be developed in consultation with the complainant.	contents of individual contractor subplans are able to satisfy this condition					
31.	Community consultation would be ongoing for residences within close proximity to the works. The information would include details of: • The proposed works. • The duration and nature of the works during construction. • What works are expected to be noisy. • What is being done to minimise noise. • When respite periods would occur. • Regular updates on progress of works.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
32.	Ensure equipment is operated and maintained in accordance with the manufacturer's instructions including replacement of engine covers, repair of defective silencing equipment, tightening of rattling components, repair of leakages in compressed air lines and shutting down equipment not in use.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
33.	Avoid the operation of noisy equipment near noise-sensitive areas and where possible, loading and unloading would be conducted away from sensitive areas.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
34.	Position plant and equipment on site in a position that provides the most acoustic shielding from buildings and topography. Plant known to emit noise in one direction would be orientated where practicable to screen the emissions.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
35.	Where feasible and reasonable install multi-frequency alarms and smart alarms on vehicles, taking into account the requirements of the Work Health and Safety legislation.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
36.	Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices (for example, minimising the use of engine brakes, and no extended periods of engine idling).	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Visual amenity						
37.	To break up views of infrastructure, screening vegetation would be planted or allowed to regenerate in areas identified in Figure 6.1 of the Visual Impact Assessment. Maintenance requirements of the planting would be considered within the operational management plan to ensure that plants are watered as required and that dead plants are replaced.	One landscape plan would be developed by AGL to satisfy this condition		Applicable	Applicable	Applicable	Applicable
38.	Clearing of vegetation minimised. In particular, the tree lines on the western, northern and eastern boundaries of the site retained intact and the transmission line route placed to allow this to occur.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable	Applicable	Applicable
39.	All areas disturbed by the construction of the proposed transmission line and solar plant would be allowed to naturally regenerate and be monitored to ensure that regeneration has occurred. Where natural regeneration is unsuccessful, revegetation would be undertaken.	Maintains responsibility for addressing this condition		Applicable	Applicable	Applicable	Applicable
40.	The colour of above ground structures, including the construction site offices, would be sympathetic to the landscape character of the site to minimise visual contrast.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
41.	The following principles would be considered regarding placement of poles near the Barrier Highway crossing to reduce their visual impact: • setting poles as far back as possible from the road where the transmission line crosses the road • arranging the poles so that the transmission line crosses roads at right angles • locating poles where they can be screened from view by existing vegetation (and adding in screening vegetation where needed).	Maintains responsibility for addressing this condition			Applicable		
	Air quality						
42.	Air quality impacts would be addressed via the development of: • Protocols to guide vehicle and construction equipment use, to minimise emissions. • Protocols to minimise and treat dust (water carts or similar).	Maintains responsibility for addressing this condition	Refer to Section 2.1	Applicable	Applicable		
	Health and safety						

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			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
43.	The substation and transmission lines would be located as far as practical from residences, farm sheds, and yards in order to reduce the potential for both chronic and acute exposure to EMFs.	Maintains responsibility for addressing this condition			Applicable		
44.	Design of electrical infrastructure would minimise EMFs.	Maintains responsibility for addressing this condition			Applicable		
45.	Fencing around the substation would be maintained to limit public access.	Maintains responsibility for addressing this condition			Applicable		
	Land use impacts and mineral resources						
46.	Consultation with neighbouring landholders regarding any temporary impacts to access or risks to livestock. Additional specific mitigation may be required such as: • Additional fencing to protect livestock from collision risks • Vehicle speed restrictions on access roads.	Maintains responsibility for addressing this condition					
47.	Consultation with mineral stakeholders would be undertaken to inform them of the timing of works and final infrastructure layout.	Maintains responsibility for addressing this condition					
48.	An easement over the affected part of Lot 7300 DP1156652, with compensation payable to the Crown under the provisions of the Land Acquisition (Just Terms Compensation) Act 1991, would be created prior to commencement of energy generation at the site.	Maintains responsibility for addressing this condition					
	Socioeconomic and community wellbeing						
49.	A Community Consultation Plan would be developed to manage impacts to community stakeholders, including but not limited to: • Protocols to keep the community updated about the progress of the project and project benefits. • Protocols to inform relevant stakeholders of potential impacts (haulage, noise etc). • Protocols to respond to any complaints received.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
50.	Liaise with local industry representatives to maximise the use of local contractors, manufacturing facilities, materials.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
51.	Liaise with local representatives regarding accommodation options for staff, to minimise adverse impacts on local services.	Maintains responsibility for addressing this condition		Applicable	Applicable		
	Traffic, transport and road safety						
52.	A Traffic Management Plan and Haulage Plan would be developed for construction traffic prior to commencing construction activities and would be approved by RMS and the Department of Planning & Infrastructure in consultation with Council. The plans shall address, but not necessarily be limited to: • The origin, number, size, frequency and final destination of vehicles entering/exiting the site. • Loads, weights and lengths of haulage and construction related vehicles and the number of movements of such vehicles. • The management and coordination of the movement of construction and personnel vehicles to the site and measures to limit disruption to other motorists, emergency vehicles and school bus timetables. • Scheduling of haulage vehicle movement to minimise convoy length or platoons. Consideration should be given to minimise the route length for road transport of all over size and over mass loads to minimise the impact on traffic. • Details of intersection improvement works in accordance with Austroads *Guide to Road Design 2010* and RMS Supplements. • A full and independent risk analysis and inspection of the proposed transport route(s) with procedures for reporting and remediating any damages caused by oversize/overmass traffic. • A commitment from the proponent to provide funding for the maintenance and repair of any affected classified roads	Maintains responsibility for addressing this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	for the duration of transportation of oversize and overmass vehicles and loads, to the satisfaction of RMS. • Assessment of road condition prior to construction on all local roads that would be utilised. • Community consultation regarding traffic impacts where sensitive receiver exceedances are predicted. • Consideration of bus schedules (particularly school buses and Countrylink services) and safe interaction between buses and construction traffic, incorporating: o Documented vehicle safety procedures regarding the school bus. o Driver training requirements. o Community consultation regarding impacts to bus routes. • Traffic controls (speed limits, signage etc). • Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts. • Provision of a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures. • Reinstatement of pre-existing conditions, where required. • Assessment of road routes to minimise impacts on transport infrastructure. • Scheduling of deliveries of major components to minimise safety risks (on other local traffic including buses).						
53.	AGL would obtain all required permits and licences from RMS prior to conducting any work in the Barrier Highway road corridor, including, as may be required: • A Works Authorisation Deed (WAD) between the developer and RMS prior to work commencing. • A Road Occupancy Licence prior to any works commencing on or adjacent to the Barrier Highway. • Special permits (if necessary) for oversize/overmass vehicles.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
54.	AGL would install gates, grids or similar structures at least 20 metres from the edge of the road on the Barrier Highway to provide for suitable storage capacity for the largest class of vehicle accessing the site.	Maintains responsibility for addressing this condition	Applicable				
	Resource use and waste management						
55.	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 onsite • Provision of toilet facilities for onsite workers and how sullage would be disposed of (i.e., pump out to local sewage treatment plant) • Provision of disposal at facilities permitted to accept the waste.	Maintains ultimate responsibility for ensuring that the contents of individual contractor subplans are able to satisfy this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage		
56.	Excess subsoil would be removed from the site and disposed of at an appropriate fill storage site.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		
57.	Excess topsoil would be retained and used in site rehabilitation.	Maintains responsibility for addressing this condition	Applicable	Applicable	Applicable		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Fire and bush fire						
58.	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to: • Management of activities with a risk of fire ignition. • Management of fuel loads onsite. • Storage and maintenance of fire fighting equipment, including siting and provision of adequate water supplies for bush fire suppression. • The below requirements of *Planning for Bush Fire Protection 2006* - o Identifying asset protection zones. o Providing adequate egress/access to the site (s4.1.3). o Emergency evacuation measures (s4.2.7). • Operational procedures relating to mitigation and suppression of bush fire relevant to the solar plant. • Post-fire clean up procedures, including the need for sampling for emissions of cadmium and lead, where appropriate.	Maintains ultimate responsibility for ensuring that the contents of individual contractor subplans are able to satisfy this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage	Subplan prepared specific to this stage	Subplan prepared specific to this stage
	Historic heritage						
59.	Should an item of historic heritage be identified, the Heritage Branch (Office of Environment and Heritage) would be contacted prior to further works being carried out in the vicinity.	Maintains responsibility for satisfying this condition	Applicable	Applicable	Applicable		
	Soil and water (includes water use)						
60.	Site specific Erosion and Sediment Control Plans would be prepared, implemented and monitored during the project, in accordance with Landcom (2004), to minimise soil and water impacts. These plans would include provisions to ensure any discharge of water from the site is managed to ensure ANZECC (2000) water quality criteria are met and traffic generated soil erosion is minimised.	Maintains ultimate responsibility for ensuring that the contents of individual contractor subplans are able to satisfy this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage		

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
61.	A Spill Response Plan would be developed to: • Manage the storage of any potential contaminants onsite. • Mitigate the effects of soil contamination by fuels or other chemicals (including emergency response and EPA notification procedures). • Prevent contaminants affecting adjacent pasture and dams.	Maintains ultimate responsibility for ensuring that the contents of individual contractor subplans are able to satisfy this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage		
62.	If water is required from the local water supply authorities, access would be obtained prior to commencement of activities in consultation with: • Cobar Water Board, for water from the Cobar Water pipeline. • Bogan Shire Council, for water from the local council supply.	Maintains responsibility for satisfying this condition	Applicable	Applicable	Applicable		
63.	Dust suppression activities would be undertaken, including: <u>During construction and decommissioning</u> • A water cart (truck) would be utilised routinely, wetting all access roads and exposed dusty surfaces as appropriate to the conditions of the project site. • Stockpiled topsoil and other materials that exhibit significant dust lift off would be wet down routinely and as appropriate. • Stabilising techniques and/or environmentally acceptable dust palliatives will be utilised if the wetting down of surfaces prove to be ineffective. <u>During operation</u> • Any area that was temporarily used during construction (laydown and trailer complex areas) would be restored back to original condition or re-vegetated with native plants. • Areas that may not have been hard packed but have been disturbed in some form would be treated with environmentally acceptable dust palliatives and / or vegetated (e.g., by means of hydro seeding) with seeds native to the area.	Maintains responsibility for satisfying this condition	Refer to Section 2.1	Subplan prepared specific to this stage	Subplan prepared specific to this stage	Subplan prepared specific to this stage	Subplan prepared specific to this stage

ID	Requirement	AGL Applicant	Stage 0 Enabling works	Stage 1 Solar plant construction	Stage 2 Connection works construction	Stage 3 Solar plant operation	Stage 4 Transmission line maintenance and operation
			Applicant and Contractors	Solar Plant Contractor	Connection Works Contractor	Solar Plant Operator	Connection Works Operator
	Cumulative impacts						
64.	Should the Nyngan Scandium Project receive development approval, EMC Metals Corp would be consulted by the Nyngan Solar Plant proponent to determine if construction traffic for the respective proposals could be scheduled to minimise cumulative impacts to third parties.	Maintains responsibility for satisfying this condition					

Appendix C – Responsibilities for Approval Conditions and OEMP Management Actions

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part A. Administrative Conditions. **A1. Obligation to minimise harm to the environment.**	The Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, **operation** or decommissioning of the development.	FS	• Execute compliance requirements	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% compliance
Part A. Administrative Conditions. **A2. Terms of Consent**	The Applicant shall carry out the development generally in accordance with the: a) State Significant development Application SSD-5355.	AGL	• Execute compliance requirements relevant to O&M	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% compliance
	b) Nyngan Solar Plant Environmental Impact Statement prepared by NGH environmental dated March 2013.	AGL/FS	• Reviewed with no additional requirements for O&M identified		

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent ĵ#Ï Î ÎÉÎÕÅÄĄ

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[1] As delineated contractually in Exhibit G Responsibilities for permits in MSA 1 June 2015 (AGL & FS)

[2] The main actions will be the use of Monthly Environmental Monitoring (Form D), Monthly O&M Safety Inspection (FS-EHS-IP-F5), Waste Register (U01), Revegetation and Rehabilitation Form (From H01), Weed Monitoring Form (Form I01),and completion of inductions (Appendix E), and maintenance of EHS Corrective Action register (SCAR).

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	c) Nyngan Solar Plant Submissions Report prepared by NGH environmental dated June 2013.	AGL	• Reviewed with no additional requirements for O&M identified		

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

	d) Conditions of this consent.	AGL	• As defined in this Table • Execute compliance requirements relevant to O&M	• Monthly Environmental Monitoring (Form D01) • O & M Monthly Site Safety Inspection (Form FS-EHS-IP-F5) • Hazard reports used to report non-conformances (APP-SMP-20A) • EHS Corrective Actions Register (SCAR, Appendix I) • Task Observation Forms eg TBO, Management TBO (Appendix G) • Compliance Tracking Program and Management Review (Appendix O)	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
				• Annual review of Risk Register (Form APP-SMP-04A in Appendix J)	

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part A. Administrative Conditions. **A3. Terms of Consent**	If there is any inconsistency between the plans and documentation referred to above, the most recent document shall prevail to the extent of the inconsistency. However, conditions of this consent prevail to the extent of any inconsistency.	AGL	• Noted	• Not triggered	• 100% Compliance
Part A. Administrative Conditions. **A4. Terms of Consent**	The applicant shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of:				
	a) any reports, plans or correspondence that are submitted in accordance with this consent;	FS	• As defined in these Tables (1-3) • Execute compliance requirements relevant to O&M	• As required	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	b) the implementation of any actions or measures contained within these documents	FS	• As defined in these Tables (1-3) • Execute compliance requirements relevant to O&M	• As required	• 100% Compliance
Part A. Administrative Conditions. **A5. Staging**	The applicant may elect to construct and/or operate the development in stages. Where staging is proposed, the Applicant shall submit a Staging Report to the Director-General prior to the commencement of the first proposed stage. The Staging Report shall provide details of:				
	a) how the development would be staged, including general details of work activities associated with each stage and the general timing of when each stage would commence	N/A	• No change to project staging		

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	b) details of the relevant conditions of development consent, which would apply to each stage and how these shall be complied with across and between the stages of the development. Where staging of the development is proposed, these conditions are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage(s). The Applicant shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Director-General prior to the commencement of each stage, identifying any changes to the proposed staging or applicable conditions.	N/A	• No change to project staging		

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part A. Administrative Conditions. **A6. Structural Adequacy**	The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.	FS	• Maintain structural adequacy of permanent buildings	• As required	• 100% Compliance to relevant NCC requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

Part A. Administrative Conditions. **A7. Decommissioning**	Within one year of decommissioning, the site shall be returned, as far as practicable, to its condition prior to the commencement of construction in consultation with the relevant landowner. All solar panels and associated above ground structures including but not necessarily limited to, the control and facilities building and electrical infrastructure, including underground infrastructure to a depth of 300 millimetres, shall be removed from the site unless otherwise agreed by the Director-General in consultation with the relevant landowner, except where the control room or overhead electricity lines are transferred to or in the control of the local electricity network operator. All other elements associated with the development, including site roads, shall be removed unless otherwise directed by the Director-General.	AGL	• Noted	• Review at 1 year prior to decommissioning	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part A. Administrative Conditions. **A8. Decommissioning**	If the solar plant is not used for the generation of electricity for a continuous period of 12 months, it shall be decommissioned by the Applicant, unless otherwise agreed by the Director-General. **The Applicant shall keep independently-verified annual records of the use of the solar panels for electricity generation.** Copies of these records shall be provided to the Director-General upon request. The solar panels and any associated infrastructures are to be dismantled and removed from the site by the Applicant within 18 months from the date that the solar panels were last used to generate electricity.	AGL	• Review panel usage annually	• Keep records on panel usage	• 100% Compliance to record keeping requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part A. Administrative Conditions. **A10. Compliance**	The Applicant shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.	FS	• Provide relevant inductions	• As required • Keep induction records (Forms and Induction Materials in Appendix E)	• 100% inductions completed and record keeping requirements
Part A. Administrative Conditions. **A11. Compliance**	The Applicant shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.	FS	• Provide relevant inductions	• As required • Keep induction records (Forms and Induction Materials in Appendix E)	• 100% inductions completed and record keeping requirements
Part A. Administrative Conditions. **A12. Compliance**	Disputes. In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the development, either party may refer the matter to the DG (DPE) for resolution.	AGL	• Implement resolutions as required	• As requested • Record dispute resolutions	• 100% resolution of disputes

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B2. Decommissioning and Rehabilitation**	The site of all ancillary facilities shall be rehabilitated to at least their pre-construction condition, unless otherwise agreed by the relevant landowner.	AGL	• Rehabilitation effective	• As requested	• 100% effective rehabilitation

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B3. Bushfire Risk**	The Applicant shall ensure that all development components on site are designed, constructed and **operated** to minimise ignition risks, provide for asset protection consistent with relevant NSW Rural Fire Services (RFS) design guidelines (Planning for Bushfire Protection 2006 and Standards for Asset Protection, Undated) and provide for necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.	FS	• Asset protection areas maintained • Ongoing engagement with RFS • Maintenance of Fire Fighting Equipment	• O & M Monthly Site Safety Inspection (Form FS-EHS-IP-F5) • Task Based Observations (Appendix G) • Monthly Environmental Monitoring (Form D01) • Revegetation and Rehabilitation (Form H01) • Keep evidence of RFS engagement (notes added to Form D01)	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B4. Bushfire Risk**	Throughout the **operational life** of the development, the Applicant shall regularly consult with the local RFS to ensure its familiarity with the development, including the construction timetable and the final location of all infrastructures on the site. The Applicant shall comply with any reasonable request of the local RFS to reduce the risk of bushfire and to enable fast access in emergencies	FS	• Regular engagement with RFS	• Annual or as required • Records of discussions kept (Form D01)	• 100% Compliance
	Dangerous goods, as defined by the Australian Dangerous Goods Code, shall be stored and handled strictly in accordance with:				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B5. Dangerous Goods**	a) all relevant Australian Standards;	FS	• Review DG storage and handling	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% Compliance
	b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund;	FS	• Review DG storage and handling	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	c) the Environment Protection Manual for Authorised Officers: Bunding and Spill Management, Technical Bulletin (Environment Protection Authority, 1997).	FS	• Review DG storage and handling	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% Compliance
	In the event of an inconsistency between the requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	FS	• Review DG storage and handling	• Monthly Environmental Monitoring (Form D01) • O&M Monthly Site Safety Inspection (Form FS-EHS-IP-F5)	• 100% Compliance
Part B. Environmental Performance General Conditions **B6. Dust Generation**	The Applicant shall construct and **operate** the development in a manner that minimises dust generation from the site, including wind-blown and traffic-generated dust as far as practicable. All	FS	• Reduce vehicle speeds during dusty periods • Stop activities (if required)	• Monthly Environmental Monitoring (Form D01)	• Zero dust migrating off site

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	development related activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should visible dust emissions attributable to the development occur during construction and operation, the Applicant shall identify and implement all practicable dust mitigation measures, including cessation of relevant works during construction, planting ground covers, using dust suppressants as appropriate, such that emissions of visible dust cease.		• Apply water (as required)		
Part B. Environmental Performance General Conditions **B7. Water Quality Impact**	Except as may be expressly provided by an Environment Protection Licence for **the development,** the Applicant shall comply with Section 120 of the Protection of the Environment Operations Act 1997 which prohibits the pollution of waters.	FS	• Maintain erosion and sediment controls • Collection, segregation and storage of all waste	• Monthly Environmental Monitoring (Form D01) • Complete waste register (Form U01)	• No pollution of water ways

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B11. Waste Management**	**All waste** materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	FS	• Collection, segregation and storage of all waste	• Complete Waste Register (Form U01)	• Removal of waste off site
Part B. Environmental Performance General Conditions **B12. Waste Management**	Waste generated outside the site **shall not be received at the site** for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	FS	• Prevent on-site waste deliveries • Provide inductions	• As required • Provide inductions (Forms and Induction Materials in Appendix E)	• Zero waste deliveries to site • 100% induction compliance
Part B. Environmental Performance General Conditions **B13. Waste Management**	**All liquid and/or non-liquid waste** generated on the site shall be assessed and classified in accordance with Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2009), or any superseding document	FS	• Collection, segregation and storage of all waste from O & M activities	• Complete Waste Register (Form U01)	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance General Conditions **B14. Utilities and Services**	Utilities, services and other infrastructure potentially affected by construction and **operation** shall be identified prior to construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the development shall be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The cost of any such arrangements shall be borne by the Applicant.	AGL	• Consult relevant land owners	• As required (when not AGL)	• 100% Compliance
Part B. Environmental Performance Visual Amenity **B18. Landscaping Requirements**	Within six months of the commissioning of the development, the Applicant shall prepare and submit a Visual Impact Verification Report for the Director-General's approval. Unless otherwise agreed to by the Director-General, the VIVR	AGL	• Undertake Visual Impact Verification Report (VIVR)	• Within 6 months of commissioning	• VIVR Completed within required timeframe

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	shall confirm the visual impacts at each of the receptors and roadways identified in the Environmental Impact Statement, or subsequently identified in the final design work, as having the potential to be 'highly impacted', considering the final model and layout of generating components on site as well as site specific mitigating factors at the receptors and roadways (such as receptor orientation and intervening screening factors). The Visual Impact Verification Report shall identify all reasonable and feasible screening and landscape planting options available at each receptor and roadways at which potential impacts have been verified to be 'high' including demonstration that these measures have been determined in consultation with affected				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	receptors and relevant road authorities.				
Part B. Environmental Performance Visual Amenity **B19. Landscaping Requirements**	Within 18 months of the approval of the Visual Impact Verification Report by the Director General (or as otherwise agreed to by the Director-General), the Applicant shall ensure that the measures identified in the Report are implemented at affected receptors and roadways as identified in the Report in consultation with the relevant residents landowners and road authorities.	AGL	• Implement requirements resulting from Visual Impact Verification Report (VIVR)	• Measures are implemented within 18 months of commissioning VIVR	• 100% Implementation of requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part B. Environmental Performance Visual Amenity **B21. Rehabilitation and Revegetation**	The Applicant shall implement a revegetation and rehabilitation program for all areas of the development footprint which are disturbed during the construction of the development but which are not required for the ongoing operation of the development including temporary construction facility sites and sections of construction access roads. The Applicant shall ensure that all revegetation measures are implemented progressively where possible and in all cases within six months of the cessation of construction activities at the relevant area. Unless otherwise agreed to by the Director-General, the Applicant shall monitor and maintain the health of all revegetated areas until such time that the plantings have been verified by an independent and	FS	• Establish landscaping plantings[6] • Monitor rehabilitation • Replant unviable plantings (no later than 2016/17 season)	• Establish specific monitoring regime for moisture stress, grazing by fauna, impacts of weeds (if any) • Independent monitoring by a specialist eg LLS, Dubbo[6] • Monthly Environmental Monitoring (Form D01) • Ground Cover Monitoring Form (H01)	• 100% rehabilitation success (as recommended by LLS, Dubbo)[6]

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	suitably qualified expert (whose appointment has been agreed to by the Director-General) as being well established, in good health and self-sustaining.				
Part B. Environmental Performance Noise - Operation **B26. Operational Noise Criteria**	The Applicant shall take all reasonable measures to minimise noise emissions and vibration from all plant and equipment operated on the site such that they do not exceed noise and vibration criteria derived by application of the NSW Industrial Noise Policy (DECC, 2000) and Assessing Vibration: A Technical Guideline (DECC, 2006).	FS	• Minimise or eliminate noise generating activities	• As required and Monthly Environmental Monitoring (Form D01) • Conduct inductions (Forms and Induction Materials in Appendix E)	• 100% Compliance to Statutory / agreed noise limits • 100% inductions conducted
Part C. Environmental Management, Reporting and Auditing Environmental Management	The Applicant shall prepare and implement an **Operational Environmental Management Plan** in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources,	FS	• Implementation of this plan (O & M EHS manual Nyngan Solar Plant).	• Management review eg. Post-auditing (Appendix O including From T01)	• 100% compliance to relevant consent conditions

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
C4. Operational Environmental Management Plan	2004), or any replacement guideline. The Plan shall include but not necessarily be limited to:				
	(a) identification of all statutory and other obligations that the Applicant is required to fulfil in relation to the **operation** of the development, including all consents, licences, approvals and consultations;	FS	• Implementation of this plan (O & M EHS manual Nyngan Solar Plant) • Identification of other statutory requirements relevant to operations	• Management review eg. Post-auditing (Appendix O including From T01) • Refer to Table 3 (below) for identified compliance requirements and management/monitoring[3]	• 100% Compliance to these requirements
	(b) a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the development;	FS	• See Org Chart	• Management review eg. Post-auditing (Appendix O including From T01)	• 100% current (always up to date)

[3] Table 3 lists other statutory requirements to be complied to.

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(c) overall environmental policies to be applied to the operation of the development;	FS	• Implementation of this plan (O & M EHS manual Nyngan Solar Plant).	• Management review eg. Post-auditing (Appendix O including From T01)	• 100% Compliance to OEMP requirements
	(d) standards and performance measures to be applied to the development, and means by which environmental performance can be periodically monitored, reviewed and improved (where appropriate) and what actions would be taken in the case that non-compliance with the requirements of this consent are identified. In particular the following environmental performance issues shall be addressed:				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(i) bushfire hazard and risk management;	FS (within arrays); AGL – all other areas	• See B3 & B4 of this table • Implementation of this plan (O & M EHS manual Nyngan Solar Plant).	• Auditing against OEMP/Consent Conditions (Appendix O including From T01)	• 100% Compliance to OEMP requirements
	(ii) management and maintenance of offsets;	AGL	• See C5 of this table • Implementation of this plan (O & M EHS manual Nyngan Solar Plant).	• Auditing against OEMP/Consent Conditions (Appendix O including From T01)	• 100% Compliance to OEMP requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(iii) inspection, monitoring and maintenance of all watercourse crossings;	FS	• See B7 of this table • Implementation of this plan (O & M EHS manual Nyngan Solar Plant).	• Auditing against OEMP/Consent Conditions (Appendix O including From T01) • Monthly Environmental Monitoring (Form D01)	• 100% Compliance to monitoring requirements
	(iv) management measures for the site, including management of vegetation, soil erosion, dust, weed control and landholder liaison.	FS	• Monitor vegetation in the arrays • Monitor dust • Monitor weeds • Liaise with land holders	• Monthly Environmental Monitoring (Form D01) • Vegetation monitoring records kept (Form H01) • Report non-compliances to AGL eg. Presence of Bathurst Burrs,	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
				significant landowner engagements, excessive dust generation events and vegetation in arrays requiring control.	
	(e) the environmental monitoring requirements outlined under this consent;	FS	• Monitoring	• As per this document (Table 1-3)	• 100% Compliance
	(f) measures to monitor and manage flood impacts in consultation with NOW;	FS	• Consultation with NSW Office of Water (NOW) • Monitoring	• Prior to operations stage • Monthly Environmental Monitoring (Form D01)	• 100% Compliance
	(g) information on water sources, including details on sources and security of water supply and water use on site;	FS	• Monitoring as required	• As required	• 100% Compliance
	(h) complaints handling procedures as identified in conditions C13 to C15;	FS	• Support AGL in complaints handling process	• Keep records (notes to be kept in Form D01)	• 100% close out of complaints

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(i) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A2b) and A2c) of this consent; and	FS	• These have all been included in this and the following table		
	(j) management of policies to ensure that environmental performance goals are met and comply with the conditions of this consent.	FS	• Senior management inspections conducted regularly • Management review eg. Post-auditing	• Management reviews after each audit (every 5 years) (Appendix O including From T01) • OEMP Records kept (ie. from this manual)	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

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	The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of Operation of the development or within such period as otherwise agreed by the Director-General. Operation shall not commence until written approval has been received from the Director-General. Upon receipt of the Director-General's approval, the Applicant shall make the Plan publicly available as soon as practicable and provide a copy of the Plan to the relevant landowner as soon as practicable.	AGL	• Plan (ie. OEMP) submitted to DP&E • Publish plan on Nyngan Solar Plant website	• As required	• 100% Compliance
Part C. Environmental Management, Reporting and Auditing Environmental Management.	Following final design and prior to the commencement of construction, or as otherwise agreed to by the Director-General, the Applicant shall develop and submit a Biodiversity Offset Management Package for the approval of the Director-General.				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
C5. Biodiversity Offset Management Package (BOMP)	The package shall detail how the ecological values lost as a result of the development will be offset. The Biodiversity Offset Management Package shall be developed in consultation with the OEH and shall (unless otherwise agreed by the Director-General) include, but not necessarily be limited to:				
	(a) an assessment of all native vegetation communities and threatened species habitat, supported by a suitable metric (such as the Biobanking Assessment Methodology), that will either be directly or indirectly impacted by the proposal;	AGL	• Biodiversity Offset Management Plan (BOMP) submitted		• Completed
	(b) the objectives and biodiversity outcomes to be achieved (including 'improve or maintain' biodiversity values), and the adequacy of the proposed offset considered;	AGL	• Biodiversity Offset Management Plan (BOMP) submitted		• Completed

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(c) the final suite of the biodiversity offset measures selected and secured including but not necessarily limited to;	AGL	• Biodiversity Offset Management Plan (BOMP) submitted		• Completed
	i) an offset proposal which is supported by a suitable metric method (such as the Biobanking Assessment Methodology);	AGL	• Biodiversity Offset Management Plan (BOMP) submitted		• Completed
	ii) details of the relative condition and values of communities on the offset site in comparison to those to be impacted;	AGL	• Validate area impacted by construction		• Validation 100% Completed
	iii) proposed management actions and expected gains;	AGL	• Biodiversity Offset Management Plan (BOMP) submitted		• Completed
	(d) the monitoring requirements for compensatory habitat works and other biodiversity offset measures proposed to ensure the outcomes of the package are achieved, including:				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	i) the monitoring of the condition of species and ecological communities at offset locations;	AGL	• Monitor transects as described in section 5.3 of BOMP • Adapt management measures where required	• Annually	• Annual monitoring occurred • No noxious weeds or pests • Species diversity and groundcover (9%) maintained or improved (compared to benchmarks in Tables 4.3, 4.4 and Section 4.2 – Weeds in BOMP
	ii) the methodology for the monitoring program(s), including the number and location of offset monitoring sites, and the sampling frequency at these sites;	AGL	• Review methodology during (d) (i) above	• Annually	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	iii) provisions for the annual reporting of the monitoring results for a set period of time as determined in consultation with the OEH; and	AGL	• As per (d) (I) above	• Annually	• 100% Compliance
	(e) timing and responsibilities for the implementation of the provisions of the Package. Land offsets shall be consistent with the Principles for the use of Biodiversity Offsets in NSW (NSW Office of Environment and Heritage, June 2011). Any land offset shall be enduring and be secured by a conservation mechanism which protects and manages the land in perpetuity. Where land offsets cannot solely achieve compensation for the loss of habitat, additional measures shall be provided to collectively deliver an improved or maintained biodiversity outcome for the	AGL	• Implement actions in BOMP (Refer Table 5-1) including fencing weed survey control, feral animal control • Implement remedial actions (as and if required) • Implement monitoring as per (d) above	• Annually • As required • Annually	• 100% Compliance to fencing completion, weed survey and control and feral animal control. • 100% of remedial actions effective • As per (d) (i) (iii) above

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	region. Where monitoring referred to in condition (d) indicates that biodiversity outcomes are not being achieved, remedial actions shall be undertaken to ensure that the objectives of the Biodiversity Offset Package are achieved.				
Part C. Environmental Management, Reporting and Auditing Reporting **C8. Incident Reporting**	The Applicant shall notify, at the earliest opportunity, the Director-General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with **the development**, the Applicant shall notify the Director-General and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant shall provide the Director-General	AGL	• Manage and notify Authorities of events causing "Environmental Harm" (AGL) • FS to provide AGL with incident details relevant to maintenance-specific incidents to enable AGL to meet statutory obligations.	• Reports kept (notes to be kept in Form D01, Appendix N) • Incidents reported in Form APP-SMP-22B (Appendix U)	• 100% Compliance to reporting requirement • 100% close out of actions arising

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.		• Where event is not deemed to be an incident, hazard reports (APP-CMP 20A) will be used for reporting		
Part C. Environmental Management, Reporting and Auditing Reporting **C9. Regular Reporting**	The Applicant shall provide regular reporting on the environmental performance **of the development** on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	FS	• Support AGL in keeping Nyngan Solar Plant website up to date	• As required • Forms completed as per A2 (Above)	• 100% Compliance
Part C. Environmental Management, Reporting and Auditing Community **C10. Community Information,**	Subject to reasonable confidentiality requirements, the Applicant shall make all documents required under this consent available for public inspection on request.	AGL	• Upload report from O&M stage to Nyngan Solar Plant website	• As required	• 100% Compliance

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

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Consultation and Involvement					
Part C. Environmental Management, Reporting and Auditing Community **C11. Provision of Electronic Information**	Prior to the commencement of construction, the Applicant shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the development. The Applicant shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:	AGL	• Upload report from O&M stage to Nyngan Solar Plant website	• As required	• 100% Compliance
	(a) the status of the development;	AGL	• Completed	• Completed	• Completed
	(b) a copy of this consent and any future modification to this consent;	AGL	• Completed	• Completed	• Completed

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

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	(c) a copy of each relevant environmental consent, licence or permit required and obtained in relation to the development;	AGL	• Completed	• Completed	• Completed
	(d) a copy of each plan, report, or monitoring program required by this consent; and	AGL	• Upload reports from operations stage (as required) to Nyngan Solar Plant website	• As required	• 100% Compliance
	(e) details of the outcomes of compliance reviews and audits of the development.	AGL	• Upload reports from operations stage (as required) to Nyngan Solar Plant website	• As required	• 100% Compliance
Part C. Environmental Management, Reporting and Auditing Community **C12. Community Information Plan**	Prior to the commencement of construction, the Applicant shall prepare and implement a Community Information Plan which sets out the community communication and consultation processes to be implemented during construction and operation of the development. The Plan shall include but not be limited to:				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

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	(a) procedures to inform the local community of planned investigations and construction activities, including blasting works (if any);	AGL	• FS to support AGL as required	• Completed	• Completed
	(b) procedures to inform the relevant community of construction traffic routes and any potential disruptions to traffic flows and amenity impacts;	AGL	• FS to support AGL as required	• Completed	• Completed
	(c) procedures to consult with local landowners residents with regard to construction traffic to ensure the safety of livestock and to limit disruption to livestock movements	AGL	• FS to support AGL as required	• Completed	• Completed
	(d) procedures to inform the community where work outside the construction hours specified in condition B22, in particular noisy activities, has been approved; and	AGL	• FS to support AGL as required	• Completed	• Completed

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	(e) procedures to inform and consult with the relevant landowner to rehabilitate impacted land	AGL	• Report progress of rehabilitation during operation stage • FS to supply to AGL	• Monthly Environmental monitoring (Form D01) • Revegetation and rehabilitation (Form H01)	• 100% Compliance
Part C. Environmental Management, Reporting and Auditing Community **C13. Complaints Procedure**	Prior to the commencement of construction, the Applicant shall ensure that the following are available for community complaints for the life of the development (including construction and **operation**) or as otherwise agreed by the Director-General:				
	a) a 24 hour telephone number on which complaints about construction and operational activities at the site may be registered;	AGL	• FS to support AGL by passing on complaints details	• As required • Notes on complaints to be kept in From D01	• 100% Compliance to provision of contact details

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	b) a postal address to which written complaints may be sent; and	AGL	• FS to support AGL by passing on complaints details	• As above	• 100% Compliance to provision of contact details
	c) an email address to which electronic complaints may be transmitted.	AGL	• FS to support AGL by passing on complaints details	• As above	• 100% Compliance to provision of contact details
Part C. Environmental Management, Reporting and Auditing Community **C14. Complaints Procedure**	The Applicant shall record details of all complaints received through the means listed in condition C13 of this consent in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:				
	a) the date and time, of the complaint;	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	b) the means by which the complaint was made (telephone, mail or email);	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
	c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
	d) the nature of the complaint;	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
	e) any action(s) taken by the Applicant in relation to the complaint, including timeframes for implementing the action; and	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
	f) if no action was taken by the Applicant in relation to the complaint, the reason(s) why no action was taken.	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
	The Complaints Register shall be made available for inspection by the Director-General upon request.	AGL	• FS to support AGL to manage and close out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
Part C. Environmental Management, Reporting and Auditing Community **C15. Complaints Procedure**	The Applicant shall provide an initial response to any complaints made in relation to the development during construction or **operation** within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in accordance with Condition C14. Any subsequent detailed response or action is to be provided within two weeks.	AGL	• FS to support AGL to manage and close-out complaints	• Records kept (notes in Form D01)	• 100% complaints closed out
Part C. Environmental Management, Reporting and Auditing Compliance	Prior to the commencement of construction, the Applicant shall develop and implement a Compliance Tracking Program (CTP), to track compliance with the requirements of this consent during the construction and **operation** of the development and shall include, but not necessarily be limited to:				

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
C16. Compliance Tracking Programme	a) provisions for periodic reporting of compliance status to the Principal including at least prior to the commencement of construction of the development, **prior to the commencement of operation of the development and within two years of operation** commencement (note changes as per MSA exhibit G);	FS	• Report compliance performance (keep CTP up to date)	• Within a 2 years of starting operations (Compliance Tracking Program Appendix O)	• CTP to be maintained up to date
	b) a program for independent environmental auditing in accordance with AS/NZ ISO 19011 :2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;	FS	• Audit of OEMP/conditions of consent	• Audit every 5 years	• 100% compliance to conducting audits and meeting all OEMP requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	c) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;	FS	• Add non-conformances to SCAR	• Monthly Environmental Monitoring (after audit) (see Appendix O)	• 100% close out of actions and maintenance of Compliance Tracking Program
	d) mechanisms for recording environmental incidents and actions taken in response to those incidents;	FS	• Complete incident report and close actions arising • Implement the EHS Corrective Actions Register (SCAR)	• Monthly Environmental Monitoring (Form D01)	• 100% capture and close out of actions
	e) provisions for reporting environmental incidents to the Principal during construction and operation [note change as per MSA exhibit G from CEMP]; and	FS	• Report incidents deemed to cause material "Environmental Harm"	• As required • Use Incident Report Form (Form APP-SMP-22B)	• 100% Compliance to reporting requirements

TABLE 1 of 3 – The Management of Compliance to Conditions of Consent

CONDITION TITLE	CONDITION DESCRIPTION/OBJECTIVE	RESPONSIBLE PARTY (AGL OR FS)[1]	OEMP MANAGEMENT ACTIONS (CONTROLS) [& OEMP Page Reference]	MONITORING REQUIREMENTS (incl. forms used)[2]	KPI/TARGET
	f) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.	FS	• Provide induction	• Keep induction records (Appendix E)	• 100% Compliance

Notes:

1. B15-16 (Natural vegetation impacts): Contractor must comply, however this is not applicable to Operations and Maintenance stage.
2. B17 (Fauna impacts): Applicable to AGL. Where the transmission line is visible and part of the overall site, FS be undertaking monthly inspections which include fauna interactions, injuries and deaths.
3. B20, 24-25 (Landscaping, Construction and Operational Noise: Not applicable to Operations and Maintenance stage.
4. B27-C3 (Noise design, Heritage, Easement, Fencing, ER, CEMP): Not applicable to Operations and Maintenance stage.
5. C6-C7 (Decommissioning, Road Dilapidation): Not applicable to Operations and Maintenance stage.
6. LLS, Dubbo: Local Land Services NSW Government, Dubbo, Nyngan Solar Plant Revegetation Plan, June 2015 (by Andrew Knopp)

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
REMM - 7. **Use of Existing Tracks**	Within areas of native vegetation, existing tracks would be used wherever possible to avoid compaction and/or disturbance.	FS	• Provide site induction (covering requirements not to drive off roads)	• Keep induction records (use materials in Appendix E)	• 100% Compliance • 100% inductions completed and record keeping requirements
REMM - 8. **Onsite Traffic Management Measures**	Traffic management measures would be incorporated into the construction and **operation** phase and would address traffic flow, vehicle speed and vehicle numbers entering and leaving the site. This would aim to prevent collisions with fauna utilising the site, particularly Grey-crowned Babblers.	FS	• Provide driver inductions (covering speed limits)	• Keep induction records (Appendix E)	• 100% Compliance to speed limits • 100% inductions completed and record keeping requirements
REMM - 17. **Ground Cover Management Plan**	A ground cover management plan would be developed as outlined in the Biodiversity Assessment	AGL	• Monitor revegetation (Form H01)	• As required • Refer to requirements C5 BOMP	• 100% Compliance

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
REMM - 18. **Weed Control Between Arrays (Operational Phase)**	The space between the PV array rows would be kept clear to enable access by vehicles for ongoing weed control, and pasture renovation, if required.	FS	• Monitor spaces between arrays (Form D01)	• Monthly Environmental Monitoring (Form D01)	• 100% Compliance
REMM - 27. **Management of Work Activities**	All personnel are responsible for managing noise from their work activities and working in a manner to reduce noise.	FS	• Provide requirements to workers with induction	• Keep induction records (Use materials in Appendix E)	• 100% Completion of inductions
REMM - 29. **Work Hours and Noisy Activities**	Where reasonable and feasible, noisy activity would be carried out in the least sensitive time periods (to be determined through community consultation).	FS	• Provide requirements to workers via induction • Consult with the community (if and when required)	• Keep induction records (Use materials in Appendix E)	• 100% Compliance to completing inductions and minimising noise

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
REMM - 32 & 33. **Noisy Equipment, Noise Sensitive Areas**	Avoid the operation of noisy equipment near noise-sensitive areas and where possible, loading and unloading would be conducted away from sensitive areas.	FS	• Maintain plant • Provide requirements to workers via induction • Consult with the community (if and when required)	• Plant Pre-Starts • Keep induction records (Use materials in Appendix E)	• 100% Compliance to completing inductions, pre-starts and minimising noise
REMM - 34. **Position of Plant and Equipment**	Position plant and equipment on site in a position that provides the most acoustic shielding from buildings and topography. Plant known to emit noise in one direction would be oriented where practicable to screen the emissions.	FS	• Provide requirements to workers via induction • Consult with the community (if and when required)	• Keep induction records (Use materials in Appendix E)	• 100% Compliance to completing inductions and minimising noise
REMM - 36. **Traffic Noise Management**	Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practice (for example, minimising the use of engine brakes, and no extended periods of engine idling).	FS	• Provide driver induction	• Keep induction records (Use materials in Appendix E)	• 100% Compliance to completing inductions and minimising noise

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
REMM - 42. **Air Quality Mitigation**	Air quality impacts would be addressed via the development of:				
	(a) Protocols to guide vehicle and construction equipment use, to minimise emissions.	FS	• Provide air emissions reduction requirements to workers via Induction	• Keep induction records (Use materials in Appendix E)	• 100% Completion of inductions
REMM - 45. **Fencing Around Substation**	Fencing around the substation would be maintained to limit public access	FS	• Monitor security fence	• As required (Security Fence Fauna Form F01)	• 100% Compliance to monitoring and repairing fence (as required)
REMM - 46. **Consultation with Neighbouring Landowners**	Consultation with neighbouring land holders regarding any temporary impacts to access or risks to livestock. Additional specific mitigation may be required such as:				
	(a) Additional fencing to protect livestock from collision risks.	FS	• Consult with neighbours	• As required • Engagement records kept (make notes in Form D01)	• 100% Compliance

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
	(b) Vehicle speed restriction on access roads.	FS	• Consult with neighbours	• As required • Engagement records kept (makes notes in Form D01)	• 100% Compliance
REMM - 47. **Consultation with Mineral Stakeholders**	Consultation with Mineral Stakeholders would be undertaken to inform them of the timing of works and infrastructure layout.	AGL	• Consult with Mineral Stakeholders	• As required • Engagement records kept (makes notes in Form D01)	• 100% Compliance
REMM - 49. **Community Consultation Plan**	A Community Consultation Plan would be developed to manage impacts to community stakeholders, including but not limited to:				
	(a) Protocols to keep the community updated about the progress of the project and project benefits	FS	• Support AGL as required	• Keep records of any updates provided to CCC	• 100% participation in CCC meetings
	(b) Protocols to inform relevant stakeholders of potential impacts (haulage, noise etc).	FS	• Support AGL as required	• Keep records of any updates provided to CCC	• 100% participation in CCC meetings
	(c) Protocols to respond to any complaints received.	FS	• Support AGL as required	• Keep records of any updates provided to CCC	• 100% participation in CCC meetings

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
REMM - 58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				
	(a) Management of activities with a high risk of fire ignition.	FS	• Engage with RFS (as required) • Bushfire controls in place and effective	• Monthly Environmental Monitoring (Form D01)	• 100% Compliance
REMM-58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				
	(b) Management of fuel loads on site.	AGL	• Reduce fuel loads (as required)	• Monthly Environmental Monitoring (Form D01)	• 100% Compliance
REMM - 58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				
	(c) Storage and maintenance of fire-fighting equipment (FFE), including siting and provision of adequate water supplies for bush fire suppression.	FS	• Ensure FFE is in place in relation to maintenance activities	• Monthly Environmental Monitoring (Form D01)	• 100% Compliance

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
				• Use a current Hot Work Permit (Appendix V)	
REMM - 58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				
	(d) The below requirement of Planning for Bush Fire Protection (2006).	AGL / Incorporating FS actions (below) into Bushfire Management Plan for site		• As required • Completion of Form H01	• 100% alignment with FS controls
	(i) Identifying asset protection zones	FS	• Asset protection zones in place • Adequate egress/access to site • Evacuation measures effective in relation to arrays and maintenance activities	• Monthly Environmental Monitoring (Form D01) • Annual monitoring and assessment (Review risk register APP-SMP-04A in Appendix J)	• 100% Compliance
	(ii) Providing adequate egress/access to the site (s4.1.3).	FS	• Asset protection zones in place	• Monthly Environmental	• 100% Compliance

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
			• Adequate egress/access to site • Evacuation measures effective in relation to arrays and maintenance activities	Monitoring (Form D01) • Annual monitoring and assessment (Review risk register APP-SMP-04A in Appendix J)	
	(iii) Emergency evacuation measures (s4.2.7).	FS	• Asset protection zones in place • Adequate egress/access to site • Evacuation measures effective in relation to arrays and maintenance activities	• Annual monitoring and assessment (Review risk register APP-SMP-04A in Appendix J)	• 100% Compliance
REMM - 58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
	(e) Operational procedures relating to mitigation and suppression of bush fire relevant to the solar plant.	AGL	• Ensure bushfire controls in OEMP ie. this manual, are effective	• Annual monitoring and assessment	• 100% Compliance and alignment with FS controls
REMM - 58. **Bush Fire Management Plan**	Develop a Bush Fire Management Plan with input from the RFS to include but not be limited to:				
	(f) Post-fire clean-up procedures, including the need for sampling for emissions of cadmium and lead, where appropriate.	AGL	• Implement post-fire clean-up	• As required	• 100% removal of Cd/Pb contaminated materials
REMM - 61. **Spill Response Plan**	A Spill Response Plan would be developed to:				
	(a) Manage the storage of any potential contaminants onsite.	FS	• Implement spill response (as required) in relation to maintenance services	• Check for spills (monthly environmental and safety inspections, Form)	• Zero loss of chemical containment
REMM - 61. **Spill Response Plan**	A Spill Response Plan would be developed to:				
	(b) Mitigate the effects of soil contamination by fuels or other chemicals (including emergency	FS	• Implement spill response (as required) in relation to	• Check for spills (monthly environmental and safety inspections)	• 100% of spills cleaned up immediately and

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
	response and EPA notification procedures).		maintenance services		notification made to relevant external agencies when required
REMM - 61. **Spill Response Plan**	A Spill Response Plan would be developed to:				
	(c) Prevent contaminants affecting adjacent pasture and dams.	FS	• Implement spill response (as required) in relation to maintenance services	• Check for spills (monthly environmental and safety inspections)	• 100% of spills cleaned up immediately
REMM - 63. **Dust Suppression Activities (Operations phase)**	Dust suppression activities would be undertaken, including: During operation.				
	(a) Any area that was temporarily used during construction (laydown and trailer complex areas) would be restored back to original condition or re-vegetated with native plants.	AGL	• Monitor dust	• As required • Dust monitoring by FS is included in Form (D01)	• Zero dust leaving site
	(b) Areas that may not have been hard packed but have been disturbed in some form would be treated with environmentally	AGL	• Monitor dust	• As required	• Zero dust leaving site

TABLE 2 of 3 – Management of Compliance to Revised Mitigation Measures

CONDITION TITLE	CONDITION DESCRIPTION	RESPONSIBLE PARTY (AGL OR FS)	OEMP MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
	acceptable palliatives and/or vegetated (e.g., By means of hydro seeding) with seeds native to the area.			• Dust monitoring by FS is included in Form (D01) • From H01	

Notes:

1. REMMs 1-7, 9-16 (Biodiversity): Not applicable to Operations and Maintenance Stage.
2. REMMs 28-30, 31-35 (Noise Amenity): Not applicable to Operations and Maintenance Stage.
3. REMMs 37 (Visual Amenity): Refer to B18-B19 in Table 1.
4. REMM 38-39 (Visual Amenity): Refer to B21 in Table 1.
5. REMMs 43, 48, 50-54 (Health and Safety, Mineral Landuse, Community, Traffic): Not applicable to Operations and Maintenance Stage.

TABLE 3 of 3 – Management of Compliance to Statutory and Other Requirements

REQUIREMENT	CONDITION DESCRIPTION[4]	RESPONSIBLE PARTY (AGL OR FS)	MANAGEMENT ACTIONS (CONTROLS)	MONITORING REQUIRMENTS	KPI'S
NSW Noxious Weeds Act (1993)	• Mexican poppy must be controlled (and is notifiable to government) • Bathurst Burr must be controlled	AGL/FS	• Physically remove weeds (as required)	• Monthly environmental monitoring (by FS) (Form D01) • Weed monitoring (Form I01) • Hazard Reports (APP-CMP-22A)	• 100% of weeds notified (as required for Sch. 5 only) and removed (once identified) • 100% use of certified professionals (ChemCert)
POE Act (1997)	• No dust or sediment to migrate off the site • No litter to migrate off site	AGL/FS	• Prevent dust migration through reducing speed or stopping dust generating activities • Ensure above is communicated through inductions • Suppress dust as required (with	• As required (particularly during dry summer months) • Monthly Environmental Monitoring (Form-D01) • Induction records kept (use	• Zero dust and sediment leaving site • 100% inductions completed

[4] This table (Table 3) is to comply with Consent Condition C4(a) to meet all statutory and other legal requirements.

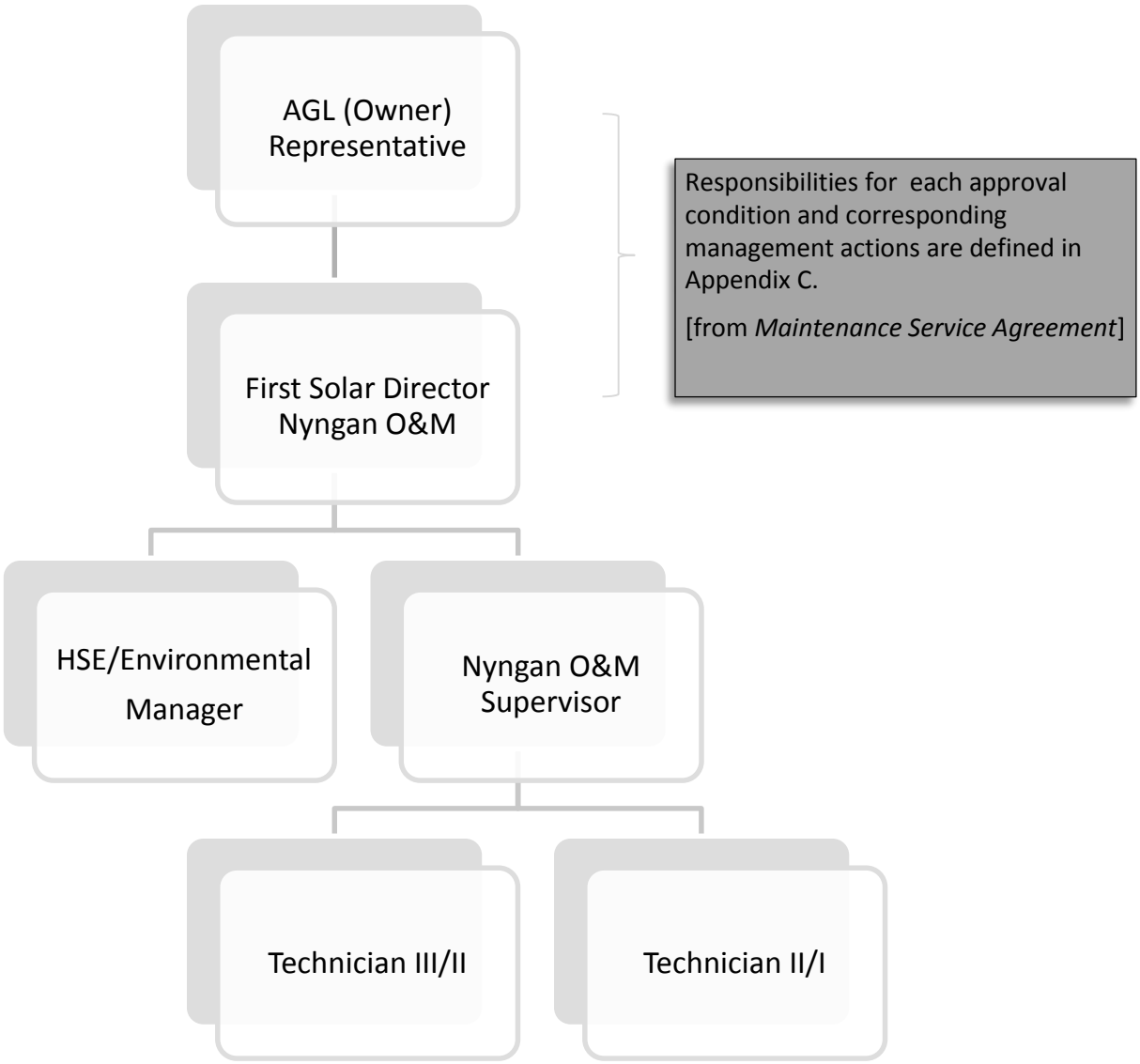
TABLE 3 of 3 – Management of Compliance to Statutory and Other Requirements

			water or dust suppressant) • Maintain ESCs and monitoring for any site run off	materials in Appendix E) • Hazard Reports (APP-CMP-22A)	
NSW Pesticide Act (1999)	• Pesticides (herbicides) to be handled by a certified competent person	AGL	• Engage only ChemCert qualified professionals	• As required • Monthly Environmental Monitoring (Form D01) • Weed monitoring (Form I01) • Hazard Reports (APP-CMP-22A)	• 100% use of certified professionals (for pest management)
Principles for the Use of Biodiversity Offsets in NSW (2011)	• Land used for offsetting eg. Area 2 and offsite location are properly maintained eg. Fencing, gates, noxious weeds contained • Offsite areas monitored (to ensure above) as per BOMP	AGL	• Implement BOMP (as per C5 above)	• Annual monitoring (as per C5 above)	• As per C5 above
NSW Waste Classification Guidelines (2009)	• Hazardous wastes and dangerous goods to be handled, transported by a licenced	FS	• When broken panels are returned to manufacturer site	• Complete waste register form (U-01) as required	• 100% compliance

TABLE 3 of 3 – Management of Compliance to Statutory and Other Requirements

	hazardous Goods/Dangerous Goods handler				
NSW Waste Avoidance and Recovery Act (2001)	• Apply principles of waste hierarchy when handling end of life packaging and operations wastes		• Review disposal options through waste hierarchy lens prior to waste disposal	• Complete waste register form (U-01, Appendix X) as required	• 100% compliance

Appendix D – Organisational Chart



Appendix E – EHS Induction, Induction Assessment & Correct Answers [for assessment]

NYNGAN
Site
Induction Requirements

Induction requirements are controlled by TASK not time. If you are undertaking work or supervising scopes of work you are NOT a visitor.

Purpose:
The purpose of this procedure is to document the induction requirements for any person accessing a First Solar Site in Australia.

Scope:
This standard applies to all First Solar employees, contractors working on a First Solar Site in Australia, and all business related visitors.

Definitions:
Business related visitors are those brought to site as:

- Consultants
- Auditors
- Company Representatives from overseas

Examples are:

- OFSC Auditors
- AGL Management or Representatives
- First Solar Executives
- First Solar, Sydney employees assisting in site offices

Contractors are companies or individuals engaged to carry out specific projects or tasks that require risk assessment (i.e., JHA/SWMS)

Examples are:

- Coates Hire – servicing Gen Set / Plant Equipment
- AKE – Electrical servicing
- Nature Call – Fauna handling
- Atco - Building maintenance

Employees are those other than contractors, employed by First Solar as:

- Fixed-term employees; or
- Permanent employees

Examples are:

- Construction Manager
- Field Superintendents
- Logistics Personnel
- OHS Advisor

BUSINESS RELATED VISITORS:

All Employees bringing visitors to site shall ensure that the visitor is aware of the following information as a minimum.

- All visitors attend a Visitor Induction (15min) (Ref to Annex A) and must provide a clear BAC test.
- Have the minimum site requirement PPE (HSE department can supply hats & glasses):
    - High Viz Long Sleeve Drill Cotton Shirt
    - Long Denim or Drill Cotton Pants
    - Ankle High Lace up Safety Boots AS/NZ 2210
    - Safety Hard Hat AS/NZ1810
    - Safety Glasses AS/NZ 1337
- Each visitor is issued with a Pegasus Sticker that is to be retained on his or her person at all times while on site.
- All visitors are escorted at all times except where the Site Map indicates they may move around unescorted (main site offices area).

Induction Presenters shall:

- Insure visitor has identification sticker on person
- Record induction details
- Record relevant photo ID

CONTRACTORS AND EMPLOYEES:

Need to fulfill the requirements of a full induction.

- Inductions are held every Tuesday and Thursday commencing at 08:00 sharp.
- Inductions are held on site in the First Solar Training Room in the HSE office.

- **Prior to an induction booking being made, we must have received all completed documentation, 3 days prior to the required induction date.**

    - If induction is required on a Tuesday, all completed paperwork must be received no later than COB on a Friday.
    - If induction is required on a Thursday, all completed paperwork must be received no later than COB on a Sunday.

- Have the minimum site requirement PPE:
    - High Viz Long Sleeve Drill Cotton Shirt
    - Long Denim or Drill Cotton Pants
    - Ankle High Lace up Safety Boots AS/NZ 2210
    - Safety Hard Hat AS/NZ1810
    - Safety Glasses AS/NZ 1337

Documentation required includes:

- Induction Application Form and subcontractor's letter of competency is required to be thoroughly completed. (Ref to Annex B);
- Copy of the front and back of White Card (WHS General Induction issued by relevant government statutory department) – SEE INSTRUCTIONS ON OBTAINING A WHITE CARD;
- Copy of the front and back of current driver's license if required to drive on site if no driving competency is required any form of photo ID;
- Copy of a pre-employment medical (completed no more than 2 years prior to start date on the project);
- Copy of a full drug and alcohol screen (completed no more than 3 months prior to start date on the project);
- Copy of any relevant licenses, tickets or qualifications required to undertake the role that is stated on the subcontractor's letter of competency.

All induction requests and completed paperwork are to be sent to:

InductionNyngan@FIRSTSOLAR.COM and a calendar invite will be emailed once induction application has been processed and induction has been booked.

Remember induction requirements are controlled by task not time if you are undertaking work or supervising scopes of work you are not a visitor.

References:

ANNEXURE A: Visitor Induction Form
ANNEXURE B: Induction Application Form (Contractor/Employees) Rev 2

APP SMP: 11I - Site Specific EHS Induction for Nyngan Solar Plant (Including Minor Works)

Nyngan Solar Power Station Project

SITE: ___Nyngan_____ **DATE:_____**

NAME:	**COMPANY:**
JOB TITLE:	
CONTACT PHONE NUMBER:	**DOB: / /**
NAME OF FS/ SUBCONTRACTOR PERSON SPONSORING VISIT:	
EMERGENCY CONTACT NAME:	**PH:**
RELATIONSHIP:	
CONSTRUCTION WHITE CARD (or equivalent) INDUCTION NUMBER: (Attach copy)	
RELEVANT TICKETS, LICENCES & NUMBERS: (Attach Copies)	
PLEASE ADVISE OF ANY ALLERGIES/MEDICAL CONDITIONS:	

Introduction:

Site Management have a legal and moral responsibility to ensure the health and safety of personnel and visitors on this site. Further, under the Planning Approvals for this project, including through to decommissioning, there are specific environmental and community requirements that must be understood and adhered to. For your safety and protection, and for protection of the environment and meeting community requirements, you are advised of the following requirements which you must comply with. Failure to comply with the following requirements may result in immediate removal from the site.

Minimum PPE that must be worn at all times

1. Steel capped lace-up footwear, hard hat & high visibility vest/shirt, long sleeve collared shirt buttoned at wrists, long pants and safety glasses;
2. Some areas may require additional PPE, eg heat or noise protection as per JHA.
3. Gloves to be used for all manual handling.

Emergencies:

In the event of an Emergency you will be instructed as to what action you should take by the person who is escorting you. The Emergency Channel for site is UHF 1 for First Solar Nyngan Project. All directions from your escort must be adhered too.

The Emergency Muster Area location point for the site is at the main entry gate as marked on the attached figure.

First Aid & fire extinguishers are located in the main office area, in plant and as directed by your site escort. First Aid facilities are available at the main office.

Contacts:

O&M Director – Frank Teofilo 0434 687 088
Site Supervisor – Peter Bradfield 0428 517 593

Site Rules:

- All personnel must be inducted to the Project Site
- All visitors must be escorted whilst on the Project Site via the First Solar Visitor's Induction
- All personnel must work to all of the requirements of the First Solar OHSMS and Project Site Safety Plan
- All personnel must wear the mandatory Personal Protective Equipment (PPE) at all times.
- Never walk under a suspended load.
- All personnel must report to work fit for duty and free of the effects of drugs, alcohol and fatigue
- Always wear a seat belt and do not exceed the local speed limits and Project Site speed limits (i.e. 40km/hr on the access road and 30km/hr if driving on site)
- Never work without fall protection and fall prevention where the risk of fall from one level to another is identified
- Never work on equipment without first applying your personal isolation lock(s) in accordance with isolation procedures – Lock Out – Tag Out process (LOTO)
- Never approach within 15 metres of 'operating' heavy equipment in a light vehicle or on foot without making positive contact with the operator.
- No Live (electrical) work is permitted
- All electrical works are subject to an Energy Isolation Permit being in place and managed by competent authorised persons
- A test for dead (not live) is completed prior to or recommencing work on an electrical equipment, following any time away from the work or following changed conditions
- Wherever there are property gates they are to be kept shut all times - ie: after entering or exiting – please close the gates.

Smoking is not permitted in:

- Any vehicle;
- Any Building;
- Within 5m of flammable goods;
- Smoking is only permitted in designated areas

Mobile phones and cameras:

- **NO MOBILE PHONES, NO CAMERAS** – Unless appointed by a Supervisor and Non-Disclosure Agreement has been signed with First Solar, Inc.
- The use of mobile phones whilst operating mobile equipment, plant and tools is prohibited.
- Texting or using your mobile phone whilst at work outside of breaks is prohibited
- Use of a mobile phone for any reason while operating a motorised vehicle is prohibited - You must stop the motorised vehicle to talk on the phone
- Any unauthorised use of mobile phones or cameras will result in the surrender of the device to management. All unauthorised photos will be deleted from the device.
- Devices can be picked up at the end of the work day at the Site Safety Office.

Current Hazards on Site:

- Plant and people interaction during maintenance activities
- Conducting lifting operations
- Dust generation
- Interaction with fauna including venomous fauna
- Heat stress (during summer months)
- Management of noxious weeds and vegetation in the arrays
- Revegetation and rehabilitation
- Any other hazards that have arisen since the writing of this induction

Accident/Incident Reporting:

It is a site requirement that all personnel report ALL injuries, hazards, environmental damage or potential harm e.g. spills of plant and equipment spills, interactions with fauna, near miss incidents and plant/vehicle damage immediately to Site Management. Hazard Report forms are available and site management will complete with your input.

Fit for Duty

All persons must cooperate fully with the Project's D&A testing process; failure will result in disciplinary action up to & including dismissal. The BAC for the site is 0.000. Personnel shall not be negatively impacted from the effects of fatigue.

Environmental Requirements:

The following are the minimum environmental requirements that all personnel need to be aware of and comply with on the Nyngan Solar Plant:

Environmental Awareness

- Personnel must be aware of the NSW Planning and Environment's Consent Conditions that apply to the operations and maintenance stage of the Nyngan Solar Plant (as summarised here)
- Personal are to minimise their impact on the environment

Fauna Interactions

- Care must be taken not to harm fauna: observe correct speed limits, stay on roads and alleys and no fauna are to be handled except by a certified fauna handler.
- All fauna interactions are to be reported and Site Supervisor is responsible for completing report.
- Special care should be taken on main access track where numerous birds and reptiles cross, particularly after rain events.

Weeds Identification

- No weeds or fauna are to be introduced to the site. Machinery and plant entering site should be clean and free of soil and plant material.
- Any Bathurst Burr weeds or Mexican Poppy plants identified must be reported to Site Supervisor for removal and disposal to landfill.

Environmental Risk Controls

- JHAs and or SWMS to be prepared for onsite works, should identify environmental risks and any accompanying required controls.

Fire Prevention

- Bushfires present a major hazard to the site and personnel are to observe no smoking policy, use a valid hot work permit (if applicable), do not drive in areas off the roads and alleys (sparks are an ignition source), be aware and have ready access to functional and appropriate firefighting equipment (as required depending on the work you are doing).

Vehicles

- Plant and vehicle pre-starts are to be up to date and completed for each working day and non-conformances correctly identified and repairs planned/actions.
- Drivers are to be aware of the potential impacts of parking trucks and other plant including need for minimising noise and reducing dust: movement of vehicles is the main source of dust on the Nyngan Solar Plant site.
- Revegetation and rehabilitation areas should be avoided at all times.
- Vehicles are to be turned off when individuals are not driving or not otherwise being used.
- Vehicles must not track mud onto the Barrier Hwy.

Vegetation

- No native vegetation is to be removed without approval from NSW Planning and Environment
- Vehicles should not be driven off approved access areas
- Areas within arrays that are overgrown and pose a hazard in terms of fuel load or obscuring of sun onto panels, or a trap for fauna, should be reported to the Site Supervisor (including array, road and block numbers).

Waste Management

- Any waste produced on site must be segregated, collected and disposed of according to type and hazardous wastes such as waste oil or specialty chemicals must be taken off site and disposed of correctly.
- If your onsite activities generate a waste, you must take this with you.
- No litter is to be left on site after working. Any litter observed MUST be picked up and disposed of correctly.
- **Remember if you see it, you own it.**

Chemical Management

- Declare any new chemicals that you have brought onto site to conduct works.
- New chemicals brought to site must be risk assessed and placed on hazardous material register including the SDS. Any new risks introduced as a result must be included in revised version of JHA or SWMS.
- All decanted chemicals must be appropriately labelled.

Spill Management and Incidents

- In the event of a spill on site, apply the Three C's: Control, Contain, and Cleanup. Any spills (of any volume) must be captured and raised with Site Supervisor who is responsible for completing a hazard (or incident) report.
- Prior to working, ensure that you have access to a spill kit and that this is properly equipped prior to undertaking works.
- In the event of an environmental incident on site, you may be required to provide assistance to the Site Supervisor when they are preparing an environmental hazard or incident report.
- No items are to be left in the areas between arrays which my impact the ability to access areas for weed control or firefighting purposes.

Dust Generation

- Where activities you are involved with generate excessive dust, these should be stopped until dust levels can be reduced.
- Keep to on site speed limits to minimise dust.
- If you are generating dust, consider other maintenance workers that may be in the vicinity of the dust.

Your Obligations

- You should assist the Site Supervisor in the completion of any forms that may require input into such as completion of waste registers, recording of fauna interactions, weed identification and control records, complaints report, on the completion of EHS inspections (e.g. Leadership H&S Inspections) or Management Observation reports.
- Assist the Site Supervisor in keeping the Compliance Tracking Program (Form) up to date if and when required e.g. inspection of fire control systems, conduct of audits, etc

Declaration:

I have participated in the Induction during which I had the Site Specific EHS Rules and requirements explained to me. I understand my EHS obligations whilst I work on this Project site and I agree to comply with these rules and requirements as explained to me.

Inductee Name	
Signature	
Date	
Inducted By Name	
Signature	
Date	

King Brown

Eastern Brown

Tiger Snake (see note below)

Inland Taipan / Fierce

Death Adder

Red Bellied Black

Red Back Spider

White Tail Spider

Tiger Snake

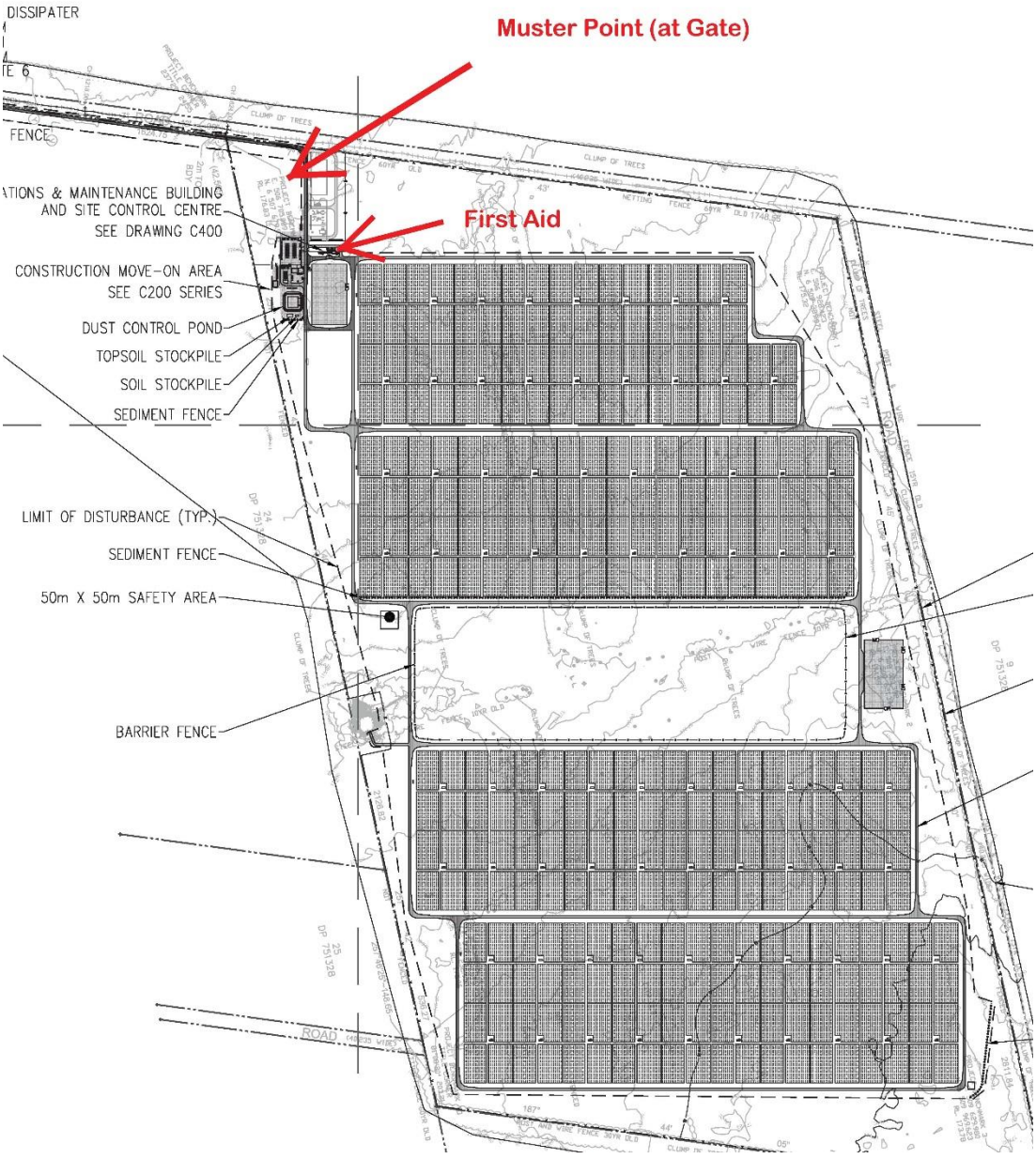
NOTE: Tiger snakes are generally found in the shaded area but have been known to move further inland.

Xanthium spinosum L. BATHURST BURR

Photographs by Graham Charles


Report Any Sightings of Mexican Poppy

Location of emergency muster point and first aid facilities



Nyngan Solar Power Station – Induction Assessment

Instructions
The objective of this assessment is to measure your level of knowledge and understanding of the Nyngan Solar Power Station Project Site Safety Plan (PSSP).
Read the questions / statements carefully, there may be more than one correct answer.
A 100% grading is required. Your instructor will go through any questions that may have been answered incorrectly to clarify the correct answer.

Workers Name:			
Signature:		**Date:**	**/ /**

Questions	
1	Construction activities will be undertaken in accordance with the requirements of the Work Health and Safety Act, 2011 and Work Health and Safety Regulations, 2011. **TRUE / FALSE**
2	Workers are **NOT** authorised to stop a task at hand, if the task and/or conditions present an unacceptable risk of injury or damage to people, plant or infrastructure? **TRUE / FALSE**
3	What are 3 types of hazards specific to the Nyngan Solar Power Station Project? 1. 2. 3.
4	Where can you go to access health and safety information (e.g. PSSP, Codes of Practice, Australian Standards) relating to your work on the Nyngan Solar Power Station Project? _____
5	Which of the following is not a project rule for the Nyngan Solar Power Station Project? a) You don't always have to wear a seat belt and can exceed the local speed limits and Project Site speed limits (i.e. 40km/hr on the access road and 30km/hr if driving on site) b) Mobile phones are prohibited from use (by workers) in the construction areas c) All electrical works are subject to a Energy Isolation Permit being in place and managed by competent authorized persons d) All visitors must be escorted whilst on the Project Site via the First Solar Visitors Induction. e) All personnel must work to all of the requirements of the First Solar Project Site Safety Plan (PSSP)
6	What documentation is required to be approved by First Solar before carrying out defined high risk construction work activities on the project? a) Job Hazard Analysis (JHA) / Safe Work Method Statement (SWMS) b) National Certificate of Competency

	c) Take 5 d) None of the above
7	Outlined below is the correct sequence for the "Hierarchy of Controls"? 1. Engineering 2. Substitution 3. Isolation 4. Administration 5. PPE 6. Elimination **TRUE / FALSE**
8	What are 3 methods for communicating health and safety information or consulting on health and safety matters? 1. 2. 3.
9	What is the maximum blood alcohol content accepted at First Solar worksites? a) 0.05 b) 0.02 c) 0.00 d) 0.08
10	Which of the following fatigue management / working hour requirements must be followed at the Nyngan Solar Power Station project? a) The maximum work hours in a 24 hour period is 12 hours (inclusive of travel time) b) The minimum rest break between shifts is 10 hours c) Both a & b above d) None of the above
11	What must you have to operate any item of Mobile Plant on site? a) High Risk Work License (where required) or Training Records (i.e. Certificates of Competency or Statements of Attainment) b) Verification of Competency c) None of the above d) Both a & b above

12	All portable electrical equipment shall be protected with what electrical device? a) Short leads to prevent overheating b) Double adaptor c) Residual Current Device (RCD) d) Surge Protector
13	What should you do if you start to feel signs and symptoms of heat stress? a) Push through and complete the task b) Have an energy drink c) Notify your supervisor or HSE team member immediately d) Check with your work mates to see how they are feeling
14	A First Solar Permit to Excavate is required for all excavation activities undertaken onsite? **TRUE / FALSE**
15	Hazardous Chemicals can only be used on the Nyngan Solar Power Station Project if? a) A Risk Assessment has been carried out and approved by First Solar prior to the hazardous chemicals being brought onto site b) Safety Data Sheets (SDS) dated within the last 5 years are kept with the product on site c) Containers in which the hazardous chemicals are stored shall be appropriately labeled d) All of the above
16	Circle the 4 **minimum mandatory** PPE required for working on the Nyngan Solar Power Station Project? a) Safety Hard Hat b) Steel capped / composite toe safety boots – lace up or lace up and zip c) Hearing Protection d) Safety glasses or prescription glasses (with side shields) rated to medium impact e) High visibility long sleeved shirt / long cotton drill trousers / jeans f) Respiratory protection g) Harness
17	What incidents, hazards or near misses need to be reported on the project? a) All of them, no matter how minor b) Hazards, theft and vandalism only c) Injuries and trespass incidents only d) Injuries only

18	Who should you call **first** in an emergency situation? a) Call 000 b) Call the Nyngan Ambulance Station direct c) Call "Emergency-Emergency-Emergency" on Channel 1 d) AGL Project Manager
19	If you are instructed to evacuate a work area, but your work is at a critical stage, what do you do? a) Keep working, its probably a false alarm b) Have a look and see if there is really a problem c) Evacuate immediately and proceed to the nominated emergency assembly area d) None of the above
20	Why do vehicles, plant and equipment need to be 'weed clean' when entering the site? a) To prevent the introduction of noxious weeds on to the power station site b) To meet Government statutory requirements c) Both a and b above
21	Your work onsite is starting to generate uncontrolled emissions of dust. Do you: a) Keep working – the water cart will eventually spot the issue and come and spray water in the area b) Cease works and immediately alert your supervisor to the issue c) Step back and assess the dust controls you have in place, identify further controls where possible d) Both b & c above
22	What are the 3 'R's of onsite snake management? a) Recognise, revive, release b) Rescue, remove, release c) Recognise, retreat, report
23	All workers on the project are responsible for ensuring that all livestock gates, both within the site and on neighbouring properties are kept closed at all times? **TRUE / FALSE**
24	If approached by a member of the community with questions about the project, you should: a) Say nothing and ignore them b) Always be polite and courteous c) Provide them with a project card or refer them to a First Solar Supervisor d) Both b & c above

Result:	

Instructors Name:
Instructors Signature:
Date:

Nyngan Solar Power Station – Induction Assessment

Instructions
The objective of this assessment is to measure your level of knowledge and understanding of the Nyngan Solar Power Station Project Site Safety Plan (PSSP).
Read the questions / statements carefully, there may be more than one correct answer.
A 100% grading is required. Your instructor will go through any questions that may have been answered incorrectly to clarify the correct answer.

Workers Name:			
Signature:		**Date:**	**/ /**

Questions	
1	Construction activities will be undertaken in accordance with the requirements of the Work Health and Safety Act, 2011 and Work Health and Safety Regulations, 2011. **TRUE / FALSE**
2	Workers are **NOT** authorised to stop a task at hand, if the task and/or conditions present an unacceptable risk of injury or damage to people, plant or infrastructure? **TRUE / FALSE**
3	What are 3 types of hazards specific to the Nyngan Solar Power Station Project? 1. *Any of the hazards mentioned in the induction E.g. dust, snakes, working around mobile plant etc* 2. 3.
4	Where can you go to access health and safety information (e.g. PSSP, Codes of Practice, Australian Standards) relating to your work on the Nyngan Solar Power Station Project? *HSE Office, Site Offices, supervisor etc*
5	Which of the following is not a project rule for the Nyngan Solar Power Station Project? a) You don't always have to wear a seat belt and can exceed the local speed limits and Project Site speed limits (i.e. 40km/hr on the access road and 30km/hr if driving on site) b) Mobile phones are prohibited from use (by workers) in the construction areas c) All electrical works are subject to a Energy Isolation Permit being in place and managed by competent authorized persons d) All visitors must be escorted whilst on the Project Site via the First Solar Visitors Induction. e) All personnel must work to all of the requirements of the First Solar Project Site Safety Plan (PSSP)
6	What documentation is required to be approved by First Solar before carrying out defined high risk construction work activities on the project? a) Job Hazard Analysis (JHA) / Safe Work Method Statement (SWMS) b) National Certificate of Competency

	c) Take 5 d) None of the above
7	Outlined below is the correct sequence for the "Hierarchy of Controls"? 1. Engineering 2. Substitution 3. Isolation 4. Administration 5. PPE 6. Elimination **TRUE / FALSE**
8	What are 3 methods for communicating health and safety information or consulting on health and safety matters? 1. *Toolbox talks, prestarts, safety alerts, HSR's, safety meeting minutes etc* 2. 3.
9	What is the maximum blood alcohol content accepted at First Solar worksites? a) 0.05 b) 0.02 c) 0.00 d) 0.08
10	Which of the following fatigue management / working hour requirements must be followed at the Nyngan Solar Power Station project? a) The maximum work hours in a 24 hour period is 12 hours (inclusive of travel time) b) The minimum rest break between shifts is 10 hours c) Both a & b above d) None of the above
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17	What incidents, hazards or near misses need to be reported on the project? a) All of them, no matter how minor b) Hazards, theft and vandalism only c) Injuries and trespass incidents only d) Injuries only

18	Who should you call **first** in an emergency situation? a) Call 000 b) Call the Nyngan Ambulance Station direct c) Call "Emergency-Emergency-Emergency" on Channel 1 d) AGL Project Manager
19	If you are instructed to evacuate a work area, but your work is at a critical stage, what do you do? a) Keep working, its probably a false alarm b) Have a look and see if there is really a problem c) Evacuate immediately and proceed to the nominated emergency assembly area d) None of the above
20	Why do vehicles, plant and equipment need to be 'weed clean' when entering the site? a) To prevent the introduction of noxious weeds on to the power station site b) To meet Government statutory requirements c) Both a and b above
21	Your work onsite is starting to generate uncontrolled emissions of dust. Do you: a) Keep working – the water cart will eventually spot the issue and come and spray water in the area b) Cease works and immediately alert your supervisor to the issue c) Step back and assess the dust controls you have in place, identify further controls where possible d) Both b & c above
22	What are the 3 'R's of onsite snake management? a) Recognise, revive, release b) Rescue, remove, release c) Recognise, retreat, report
23	All workers on the project are responsible for ensuring that all livestock gates, both within the site and on neighbouring properties are kept closed at all times? **TRUE / FALSE**
24	If approached by a member of the community with questions about the project, you should: a) Say nothing and ignore them b) Always be polite and courteous c) Provide them with a project card or refer them to a First Solar Supervisor d) Both b & c above

Result:	

Instructors Name:
Instructors Signature:
Date:

Appendix F – Solar Power Plant Monthly Site Safety Inspection

Inspection Location:	
Date of Inspection:	Time of Inspection:
Department/Areas Covered:	
Inspection Location:	

Yards and Buildings	SAT	Unsat	Comments	W/O Number
Access				
Structure condition				
Aisles				
Roads				
Work areas				
Housekeeping				
Other				
Floors, Stairways and Walkways	**SAT**	**Unsat**	**Comments**	**W/O Number**
Condition				
Housekeeping				
Guardrails				
Illumination				
Handrails				
Ladders, Scaffolds, etc.	**SAT**	**Unsat**	**Comments**	**W/O Number**
Suitability				
Properly used				
Strength				
Properly maintained				
Excavations	**SAT**	**Unsat**	**Comments**	**W/O Number**
Shored or sloped				
Access				
Barricaded				

Spoilage piles				
Illumination	SAT	Unsat	Comments	W/O Number
Day - Work area				
Night - Work area				
Passageways				

Electrical Equipment	SAT	Unsat	Comments	W/O Number
Condition				
Calibration dates current				
Identification of controls				
Harmful Materials	SAT	Unsat	Comments	W/O Number
Storage				
Handling				
Personal Protective Equipment	SAT	Unsat	Comments	W/O Number
Adequacy				
Availability				
Condition				
Worn as needed				
Machine Guards	SAT	Unsat	Comments	W/O Number
Controls accessible				
Condition				
Lock-out procedures				
Operating procedures				
Controls identified				
Hand Tools	SAT	Unsat	Comments	W/O Number
Condition				

Suitability				
Portable Power Tools	SAT	Unsat	Comments	W/O Number
Condition				
Suitability				
Grounded				
Double insulated				
Materials Handling Equipment	SAT	Unsat	Comments	W/O Number
Condition				
Controls				
Guards				
Records				
Materials Storage	SAT	Unsat	Comments	W/O Number
Stability				
Convenience				
Housekeeping				

First Aid	SAT	Unsat	Comments	W/O Number
Supplies				
Supplies Condition				
Qualified attendant if required				
Fire Prevention	SAT	Unsat	Comments	W/O Number
Equipment				
Exits				
Flammable materials controlled				
Health and Safety Program	SAT	Unsat	Comments	W/O Number
Health and Safety Policy				

Part II of the *Code* posted				
Site	SAT	Unsat	Comments	W/O Number
Retention Basin				
Storm Drainage				
Environmental	SAT	Unsat	Comments	W/O Number
Universal Waste Stored Properly				
No Universal Waste greater than one year old?				
No Oil Leakage				
Additional Comments:				

Appendix G – Operations and Maintenance Safety Observation Form and Task Based Observation Form (TBO)

First Solar Operations and Maintenance: Safety Observation Form				
Date:				
Observer Name:			Site Supervisor:	
Work Observed:				
Observers Comments:				
Personal Protective Equipment	Yes	No	NA	Comment
Required Safety eyewear worn (goggles, glasses, with side shields, face shield)?				
Hard Hats Worn and in good condition?				
Gloves worn when appropriate?				
Fire Resistant Clothing worn where required?				
Hearing protection worn in areas where required?				
Appropriate Footwear being worn?				
General Work Site	Yes	No	NA	Comment
Area Clean				
All Doors Closed				
Work area clear of tripping hazards?				
Appropriate hand tools in use?				
Hand tools in good condition?				
No individual manual lifting of objects over 50				
Plant signage in place and in good condition				

Proper safety gear available to employees and visitors / stored in proper area to keep clean and in good condition (glasses not scratched, etc.)				
O&M facilities clean and organized/Safety Information posted. (i.e. emergency contact nos. Bulletins etc.)				
Plant vehicle clean, in good condition, and PMs completed				
Pre-Job Brief/ Job Hazard Analysis	Yes	No	NA	Comment
Was a Pre-job brief and JHA filled out prior to the work commencing?				
Did the whole crew participate in filling out the Pre-job Brief and sign off?				
Were the steps written out and not pre-filled in?				
Are workers following the steps in the JHA?				
Lock Out	Yes	No	NA	Comment
All Personnel have locks in place				
Lock Out forms correctly filled out				
All Personnel understand the boundaries of the Lock Out				
LOTO equipment stored and organized properly and in good condition				
Close Out	Yes	No	NA	Comment
Was Observation discussed with personnel?				

APP-SMP: 20C - Task Based Observation (TBO) Form

Each member of the management team is required to complete at least one TBO each per week.

We suggest you do not carry this paper into the field but rather make use of one of your usual field visits and complete the TBO form upon your return to the office.

We suggest that you do engage with the employee and tell him/her that you are completing a safety observation of their work task.

Please make an effort to provide positive feedback to the employee. If you have any safety concerns about the work task being carried out refer this to the site safety supervisor

Task being performed:	*Date: Thursday, June 25, 2015*
Observer Name:	*Signature:*
Names of people/crew performing task:	
Contracting Company:	

Is there a relevant JHA for the task being performed located on the job and are the controls effective?	*YES*	*NO*
	☒	☐

According to the hierarchy of controls, what are 3 'hard' or 'most effective' controls used in this JHA:

1.

2.

3.

Observations: *List at least 3 observations you made, and whether they were positive, or require action/s by ticking the appropriate box below.*

	Observation	***Safe***	***Requires Action***
#1		☐	☐
#2		☐	☐
#3		☐	☐
#4		☐	☐
#5		☐	☐

Actions: *Assign corrective actions for any unsafe tasks or job conditions from the list above. (Ensure you discuss actions with person/s you are assigning actions to and agree on a due date, before assigning.)*

#1	***Corrective action required:***	
	Allocated to (full name):	**Due Date:**
	Low / Med / High: (please circle)	**Hierarchy of control used (please circle)** **Elimination / Substitution / Isolation / Engineering / Administration / PPE**

APP-SMP: 20C - Task Based Observation (TBO) Form

#2	***Corrective action required:***	
	Allocated to (full name):	**Due Date:**
	Low / Med / High: (please circle)	**Hierarchy of control used (please circle)** **Elimination / Substitution / Isolation / Engineering / Administration / PPE**
#3	***Corrective action required:***	
	Allocated to (full name):	**Due Date:**
	Low / Med / High: (please circle)	**Hierarchy of control used (please circle)** **Elimination / Substitution / Isolation / Engineering / Administration / PPE**
#4	***Corrective action required:***	
	Allocated to (full name):	**Due Date:**
	Low / Med / High: (please circle)	**Hierarchy of control used (please circle)** **Elimination / Substitution / Isolation / Engineering / Administration / PPE**
#5	***Corrective action required:***	
	Allocated to (full name):	**Due Date:**
	Low / Med / High: (please circle)	**Hierarchy of control used (please circle)** **Elimination / Substitution / Isolation / Engineering / Administration / PPE**

OFFICE USE ONLY

Safety Advisor Reviewed	☐	Safety Advisor Signature:			
Entered on to TBO Register	☐	Entered onto SCAR	☐	Corrective Actions Allocated	☐
Scanned & Uploaded to Power	☐	Corrective Action #		Corrective Action #	
Corrective Action #		Corrective Action #		Corrective Action #	

Appendix H – Hazard Report Form

APP-CMP 20A - HAZARD REPORT FORM

Date:	**Time:**		**Site:**	
Reported By:				
Supervisor:				
Location of Hazard:				

Hazard Description (i.e. What is the Hazard)

What Injuries or Incidents Could Result from the Hazard?

Priority for Action - On the Spot Risk Ranking (please tick)

Low □	**Medium** □	**High** □

Immediate Action(s) Taken

Action Taken	Actioned By:

Are further Actions Required?	**Yes** □	**No** □

Corrective Actions (what needs to be done now?)

Corrective Action	Responsible Person	Due Date

Construction Manager / Project HSE Manager Review

Construction Manager Signature:	***Date:***
Project HSE Manager Signature:	***Date:***

HSE Administration (to be completed by Site HSE Administrator / HSE Team)

Date Entered into INTELEX:	
INTELEX Hazard ID No.	

Appendix I - Safety Corrective Actions Register (SCAR)

APP CMP: 24A - Safety Corrective Action Register (SCAR)									
Id No.	Date	Hazard	Category (Safety, Health or Environment)	Risk Rating (H,M, L)	Corrective Action Required	HoC (Elim, Sub, Iso, Engin, Admin, PPE)	Responsible Person	Due Date	Date Closed

Appendix J – Risk Register and HIRAC Procedure

SMP: 04 Hazard Identification, Risk Assessment & Control

1.0 Purpose

This procedure describes how First Solar will act to eliminate or minimise health and safety risks arising from its business. Managing work health & safety risks is an ongoing process that is triggered when any changes affect work activities.

There are 2 stages to follow to achieve this:

- Corporate Risk Management by completion of the First Solar Risk Register (APP-SMP04A)
- Project Risk Management by completion of the First Solar Risk Register(APP-SMP04A)

1.1 Corporate Risk Management

This involves identifying the safety risks across the entire business, and steps to mitigate them from a strategic senior management perspective. It involves the need for a competent safety professional to conduct a workshop with senior management to determine the risks in the business, prioritise them, and determine ways to mitigate, to as low as reasonably practicable, by the provision of appropriate resources and processes. Once established this process is to be used to steer the Health & Safety strategy of the business going forward and must be reviewed on a regular basis by the senior management team. The template APP SMP04A Risk Register is to be utilized to achieve this.

The detailed process to achieve this can follow the principles in this procedure.

1.2 Project Risk Management

This procedure must be implemented when

- Starting a new Project
- Opening a new site
- Changing Work Practices, procedures or the work environment
- Commencing each stage of the construction process schedule, i.e.

    - Move On
    - Site Preparation
    - Structures
    - Underground Services
    - Above Ground Services

- Purchasing new or used equipment or using new substances
- New information about workplace risks become known
- Responding to workplace accidents, incidents or near misses / hits
- Responding to concerns from workers during safety consultation procedures
- Required by Regulation for specific hazards

It is also important to note that there must be consideration of this at the conceptual design stage of a new project whenever possible. See SMP06 Safety in Design procedure for further guidance.

1.3 Training & Competency requirements

It is imperative that only trained, competent personnel conduct this process. Therefore, only First Solar workers that have been trained in the First Solar Risk Management Training module, and are deemed to have the necessary knowledge & experience of the industry, are to implement this process in to First Solar work activities.

1.4 Consultation

Consultation with workers and their health & safety representatives is an important legal requirement and therefore required at each step of this process. If a First Solar Safety Committee is established then it needs to be also engaged with the procedure.

1.5 Interface agreements

This procedure must include consultation with third parties e.g. a client or a neighbouring business, that may influence the level of risk to the workers and members of the public. If the level of risk due to the third party activities is deemed sufficient to consider in the project risk assessment then a interface agreement must be drawn up that includes

- Key stakeholders
- Responsibilities & coordination requirements between the parties with regards the management of risk

1.6 Approved Sign Off

The Project Manager is responsible to approve & sign off the completed Project Risk Assessment.

2.0 Process

First Solar will use a Risk Management approach that involves the following four steps

- Identify the hazards

- Assess the risks
- Control the risks
- Review the controls

FIGURE 1: The risk management process

2.1 Hazard Identification

Identifying hazards in the workplace involves finding things and situations that could potentially cause harm to people. Hazards arise from the following aspects of work and their interaction:

- Physical work environment
- Equipment, materials & substances used
- Work tasks and how they are performed
- Work design and management
- How the project may affect the clients or other entity's workplace including the public.
- How the client and other entity's workplace may impact on the project.

This hazard identification procedure must include the hazards that may also be introduced to the site such as

- Purchasing or hiring of goods & equipment to be used in the workplace – See SMP13
- Purchasing or hiring of plant to be used in the workplace – See SMP13
- Purchasing of substances to be used in the workplace – See SMP13
- Labour Hire – See SMP12 Selection & Management of Contractors

First Solar shall ensure that all health & safety hazards are identified by the methodical completion of an approved technique of assessment for all projects and sites and that they are updated if there are any change in activities and / or circumstances at any time.

These techniques are to include:

At the Project Planning or new site Stage

- Risk Assessment Workshops
- Safety in Design (e.g.CHAIR) Analysis
- Procurement of Goods Analysis
- Job Safety Analysis
- Site visits (if possible)
- Incident statistics review for the industry
- Industry Safety Alerts

At the Project Implementation & Operational stage

- Inspection Programme
- Hazard Reporting Function
- Audits
- Safety Committee meetings
- New procedures and / or materials introduced to the workplace

- Accident Investigation Outcomes
- Near Miss Reports

2.1.1 Hazard Identification Workshops

At the planning stage, to achieve a thorough hazard identification there needs the input of all key personnel, and as a minimum hazard Identification workshops should include the following to conduct this exercise:

- Project Manager
- HSE Manager
- Construction Manager
- Site Manager
- Health & Safety Representative or Committee Member
- Contractors as appropriate to the activity being assessed

The workshop group need to determine the scope of the analysis as there maybe a need to break down in to several separate Hazard Identification studies dependent on the nature and complexity of the situation.

All workshops must ensure that they utilize the best known resources to ensure all foreseeable hazards are identified, such as

- Industry experts knowledge, not necessarily in First Solar
- Knowledge from Regulators, Unions, technical specialists
- Manufacturers & suppliers information
- Safety Data Sheets
- Analyse records of workplace incidents, near misses, worker complaints, sick leave.

The First Solar Risk Assessment template is the tool to record all the findings from the workshops. This can be found in APP SMP:04A.

2.2 Assess Risks

Once the hazards have been identified then the hazard identification workshop needs to develop in to a risk assessment process that involves considering what could happen if someone is exposed to each hazard, i.e. the consequence, and the likelihood of it happening. In considering likelihood and consequence available information on the hazard including company records of incidents, illnesses and disease are to taken into consideration. Refer to company database for incident and accident records.

It must be a systematic method of assessing the risk (qualitatively or quantitatively) to then evaluate the level of risk relating to a particular hazard and it must include the same personnel as the Hazard Identification workshop, therefore again ensuring it is completed by competent personnel, that understand the First Solar industry.

The risks must then be evaluated using the risk assessment matrix, see below, to determine the level of risk and therefore allow for prioritisation of action for control measures being implemented.

When considering the likelihood and severity of risk there is further guidance in APP SMP04B to guide the workshops. The Risk Assessment template is to be completed with the risk assessment evaluation for each hazard identified.

It is important to note that the assessment of risk is a subjective assessment and so expertise and competence of the personnel involved is a critical factor in identifying the right levels of risk.

First Solar Risk Register Matrix

How severely could it hurt someone or how ill could it make someone?	**How likely is it to occur?**			
	Very Likely (VL) Could happen any time	**Likely (L)** Could happen sometime	**Unlikely (U)** Could happen but very rarely	**Very unlikely(VU)** Could happen, but probably never will
Critical: Fatal or permanent disability	H	H	H	M
Major: Long term illness or serious injury	H	H	M	M
Moderate: Medical attention and several days off work	H	M	M	L
Minor: First aid needed	M	M	L	L

2.2.1 Risk Evaluation Criteria

Once the levels of risk have been evaluated then the action to be taken with regards control measures, and the timeframe to achieve it, is then prioritized using the following as guidance.

Risk Level	Guidance
HIGH	**Highest Priority Action: An unacceptable risk and the hierarchy of controls must be applied to reduce it to level As Low As Reasonably Practicable. Work should not continue until controls are implemented using the hierarchy of controls. If risk cannot be reduced the Construction Manager's approval must be obtained.**
Medium	**Risk mitigation to be considered using the hierarchy of controls; can be a tolerable risk provided it can be demonstrated that the control measures are As Low As Reasonably Practicable**
Low	**A tolerable risk that may involve administrative/PPE controls that requires management and ongoing monitoring.**

If a risk remains at a high risk after full consultation and application of the Hierarchy of Controls, then the risk assessment must be placed on the Corrective Action Register as a High risk, and therefore escalated to the First Solar Senior Management to consider further the resources required to reduce the risk.

2.3 Control Measures

The next stage that needs to be fulfilled is the identification of control measures for each hazard that has a risk evaluation. Again this is to be conducted by the workshops described above, with control measures for each hazard identified and risk assessed.

To achieve this the workshop is to follow the Hierarchy of Controls Principle, explained below in Diagram 1.

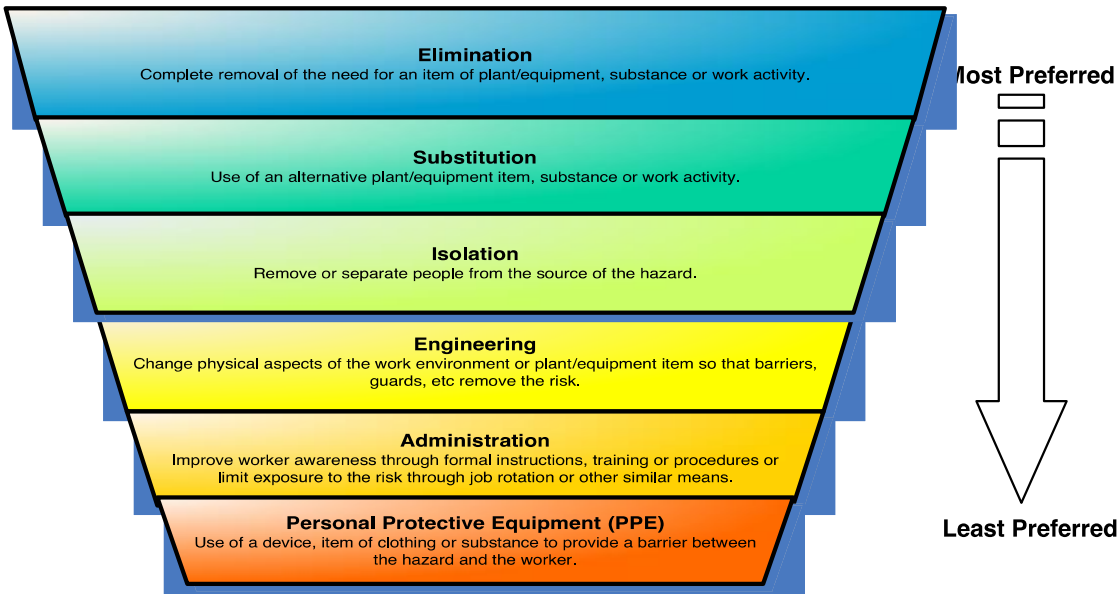
This ensures that elimination of the risk is the first consideration.

If elimination of the risk is not reasonably practicable, then the next levels of the Hierarchy must be fully considered and the best control method determined to ensure the risk level is reduced to as Low As Reasonably Practicable (ALARP), i.e. risk control measures will be proportionate with the level of risk present.

It is important to note that whilst conducting this exercise the workshop must also ensure that all legal requirements are included in the process as per the SMP03 Legislation Register, to include legislation, Codes of Practice and Australian Standards as, for example, some high risk activities could have minimum legal control measures that must be implemented such as Confined Spaces entry, Working on live electricity etc.

2.3.1 Hierarchy of Control

Diagram 1 The hierarchy



2.3.2 Elimination of the hazard/risk

The most effective control measure involves eliminating the hazard and associated risk. The best way to do this is by, firstly, not introducing the hazard into the workplace. For example, you can eliminate the risk of a fall from height by doing the work at ground level.

Eliminating hazards is often cheaper and more practical to achieve at the design or planning stage of a product, process or place used for work. In these early phases, there is greater scope to design out hazards or incorporate risk control measures that are compatible with the original design and functional requirements. For example, a noisy machine could be designed and built to produce as little noise as possible, which is more effective than providing workers with personal hearing protectors.

You can also eliminate risks by removing the hazard completely, for example, by removing trip hazards on the floor or disposing of unwanted chemicals.

It may not be possible to eliminate a hazard if doing so means that you cannot make the end product or deliver the service. If you cannot eliminate the hazard, then eliminate as many of the risks associated with the hazard as possible.

2.3.3 Substitution, Isolation or Engineering

If it is not reasonably practicable to eliminate the hazards and associated risks, you should minimise the risks using one or more of the following approaches:

2.3.3.1 Substitute the hazard with something safer

For instance, replace solvent-based paints with water-based paints

2.3.3.2 Isolate the hazard from people

This involves physically separating the source of harm from people by distance or using barriers. For instance, install guard rails around exposed edges and holes in floors; use remote control systems to operate machinery; store chemicals in a fume cabinet.

2.3.3.3 Use engineering controls

An engineering control is a control measure that is physical in nature, including a mechanical device or process. For instance, use mechanical devices such as trolleys or hoists to move heavy loads; place guards around moving parts of machinery; install residual current devices (electrical safety switches); set work rates on a production line to reduce fatigue.

2.3.4 Administrative Controls, Personal Protective Equipment (PPE)

These control measures do not control the hazard at the source. They rely on human behaviour and supervision, and used on their own, tend to be least effective in minimising risks. Two approaches to reduce risk in this way are:

2.3.4.1 Use administrative controls

Administrative controls are work methods or procedures that are designed to minimise exposure to a hazard. For instance, develop procedures on how to operate machinery safely, limit exposure time to a hazardous task, use signs to warn people of a hazard.

2.3.4.2 Use Personal Protective Equipment (PPE)

Examples of PPE include ear protectors, respirators, facemasks, hard hats, gloves, aprons and protective eyewear. PPE limits exposure to the harmful effects of a hazard but only if workers wear and use the PPE correctly

2.3.4.3 Administrative controls and PPE should only be used:

- when there are no other practical control measures available (as a last resort)
- as an interim measure until a more effective way of controlling the risk can be used

- to supplement higher level control measures (as a back-up).

2.3.5 Control Measures Residual Evaluation & Implementation

Once the control measures are identified, they must be documented on the Risk Assessment template document for each hazard, and then the residual risk evaluated and documented.

All control measures that need to be actioned must be recorded in the Corrective Actions Register, which includes a need for an owner and a timeframe that must be agreed by the workshop.

Some control measures may state a requirement for further detailed analysis of a work activity, a Job Hazard Analysis, refer to the First Solar SMP:05 Job Hazard Analysis procedure for further process to follow and implement.

2.4 Review control measures

Control Measures must be reviewed, and If necessary revised, periodically and in the following circumstances:

- When the control measure is not effective in controlling the risk
- When the next stage of construction commences, i.e. prior to commencement of:
    - Move on
    - Site Preparation (may occur in tandem with Move on)
    - Structures
    - Underground Services
    - Above Ground Services

- Before a change at the workplace that is likely to give rise to a new or different health & safety risk that the control measure may not effectively control
- If a new hazard or risk is identified
- If the results of consultation indicate that a review is necessary
- If a health & safety representative requests a review

2.5 Evaluation

An evaluation of the effectiveness of this procedure must take place by the Project Team in line with the First Solar Procedure SMP:25 Management Review, to ensure that the control measures are effective in maintaining the risk levels to As Low As Reasonably Practicable. This can be achieved by periodically reviewing the

- Hazard Identification Reports
- Worker Consultation Reports
- Reviews of site inspections,
- Reviews of site audits,
- Near Miss Reports
- Review of accident & incident investigation outcomes.

The Risk Assessment must also be reviewed by the project management team at least quarterly to ensure the risk profiles continue to accurately reflect the risk levels and control measures, and if they are deemed invalid then this procedure is to be undertaken again to reassess the risk level and consider further or alternate control measures.

3.0 Records Management

APP SMP04A First Solar Risk Register is to be fully completed.

A Project and Site must have a Risk Assessment fully developed to capture all of the steps in this procedure. The assessment must be under regular review by the Project or site Team and updated should there be a reason for doing so, such as a major incident, learning's or significant Project site changes.

The First Solar Construction Manager, supported by the Site HSE Manager is responsible for the maintenance of the assessment on a project.

All documents used in the workshops must be stored in the records management system, including:

- Hazard checklists
- Worksheets
- Assessment details
- And all other tools used in this process
- How & when the control measures were implemented, monitored & reviewed
- Who was consulted
- Relevant training records
- Any plans for changes

4.0 Responsibilities

The following table contains a summary of key responsibilities identified in the body of this document:

Position or Role	Key Responsibilities
Project Director Australia	Items 1.0, 1.1, 1.2
Project Manager	Items 1.0. 1.1, 1.2, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5
Construction Manager	Item 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 3.0
HSE Manager	Items 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 3.0

PROJECT EHS RISK REGISTER: Nyngan Solar Power Station - Operations and Maintenance Phase

Number	Risk	Project Phase	Cause	Effect/ Impact	Risk Rating					Risk Mitigation	Responsible Person First Solar	Residual Risk Rating						Comments
					Consequence		Likelihood		Rating			Severity		Likelihood		Rating		
1	**Falls from Heights**	Deliveries and unloading Refuelling/Lubrication/Servicing Mobile Plant Delivery and installation of site sheds Construction of site offices, walkways etc Excavate, place, electrical (and other) services Site Sheds / Amenities Installation Delivery and installation of PCS structures Delivery and installation of PVIS structure Demobilising activities Maintenance on permanent strcutures	Unprotected edges (e.g. mobile scaffolding) Unprotected trenches and excavations Unprotected edges on Mobile Plant Loading and Unloading of Deliveries	Fatality Permanent Injury Minor injury	4	Critical	U	Unlikely	H	High	**HCP01: Work at Height** Where elimination of WAH and the risk of falling objects is not possible use the higherarchy of control as per HCP 01: **ABOVE THE LINE CONTROLS** - SiD - Design of PCS includes compliant access and edge protection - Fall prevention (stable secure platforms with guardrails, scaffolding, mobile plant edge protection as per project mobile plant specification matrix) - Physical Barriers - Open trench areas to have solid barriers installed and solid covers when not being worked on - EWP's and Scissor Lifts - Consultation with Suppliers to ensure deliveries meet the following: * Site sheds and accomodation modules to have lifting lugs/points at base eliminating working at height requirements. * Design specification for PCS / PVIS structures includes certified lifting lugs / points. Copies of certificates to be obtained by the project prior to lifting. * Container jacking / winching style of system for unloading sea containers to eliminate the need for lifting containers with mobile cranes * Tables, carteridge assemblies delivered palletised (or similar) to enable the use of Forklifts to unload sea containers and eliminating need for people working at heights where possible - Climbing on loads without effective fall protection is not permitted on the project. - Establish dedicated loading and unloading areas / facilities that allows safe access to rig loads for lifting and unloading. This area / facility may include equipment such as: * Scaffold platforms (or similar purpose designed access platforms) * EWPs * Overhead anchorage for securing Personal Fall Protection Equipment **BELOW THE LINE CONTROLS** - No work from A-Frame Ladders - Platform ladders only approved on site - Physical Restraint / fall arrrest systems as a primary means of control used as a last resort only and in accordance with a Work at Height Permit System - Trained and authorised personnel - where fall arrest/restraint equipment used workers trained as per AS1891.4 - Anchor points certified by suitably qualified and competent engineer - Anchor points installed by trained and competent persons as per AS1891.4 or qualified Rigger (i.e. Basic Rigging) - Equipment used inspected prior to use to ensure it is fit for purpose - Inspection and Testing processes for fall restraint / fall arrest equipment and anchor points as per AS1891.4 - Project ERP to include specific response protocol for rescue at heights - Emergency response protocols for harness based work at heights shall be established and incorporated into activity specific SWMS / JHAs	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
2	**Slip, trips, falls on same level (i.e. not from height)**	All stages of the project	Poor housekeeping Unclear lay down/delivery areas Uneven surfaces - lack of maintenance - high pedestrian areas Sloping surfaces Slippery/wet surfaces Footwear	Injuries (e.g. sprains / strains) requiring medical attention	2	Moderate	L	Likely	M	Medium	**SMP: 07 Project Site Safety Plans** **ABOVE THE LINE** - Site ground preparation prior to general construction access - Compliant handrails on stairways and walkways where these is a risk of fall - Treadgrips on stairs - Non slip surfaces - walkways, pathways - Limit worker access to high risk areas / unauthorised access areas (e.g. dam) through the use of suitable barricading (physical solid barriers) and signage **BELOW THE LINE CONTROLS** - Establish site vehicle movement plan which details all dedicated pedestrian access / egress pathways on-site - Provision of adequate lighting - Housekeeping practices - daily site clean up and maintenance eg; unobstructed walkways, regular rubbish removal - Review work environment in wet conditions - Regular health and safety inspections to review condition of pathways, stairways, lighting etc	Site Supervisor	2	Moderate	VU	Very Unlikely	L	Low	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2	Number	Risk	Project Phase	Cause	Effect/ Impact	Risk Rating						Risk Mitigation	Responsible Person First Solar	Residual Risk Rating						Comments
3							Consequ-ence		Likelihood		Rating				Severity		Likelihood		Rating	
7	**3**	**Person struck/crushed by mobile plant in work area**	All stages of the Project	Vehicles travelling or moving in proximity to people/work areas Poor delineation of site plant and pedestrian zones (i.e. access not restricted) Sudden/unexpected movement of plant Lack of protection for workers (i.e. less than adequate barriers) Plant design: Plant blind spots, poor operator visibility or poor hazard detection Lack of operator competence / Inexperienced plant operators Loss of control of machine / machine runaway Poor communication (i.e. btw operator & nearby workers)	Fatality	4	Critical	L	Likely	H	High	**HCP02: Mobile Plant** **ABOVE THE LINE CONTROLS** - Utilise physical (solid) barrier to separate people and/or LV's from mobile plant (i.e. restrict mobile plant entering area where people or light vehicles may operate) - Where spotters are required (on the ground) they should be protected by a physical barrier(s) where practicable; - Establish dedicated plant refuelling area(s) with physical (solid) barrier protection **BELOW THE LINE CONTROLS** - Where physical (solid) barriers are not practicable, identify type (e.g. crowd control barrier, parawebbing fencing, flagging etc.) & location of pedestrian / worker barriers to be established (i.e. around plant or general operating area). - If activity occurring over large &/or dynamic areas - barrier suitability is to be reviewed frequently & upgraded as required - Vehicle Movement Plans (VMPs) highlighting identify paths of travel for plant and people, designated parking areas (REVERSE PARKING ONLY), speed limits, laydown areas, signage (e.g. speed signs, reverse parking signs in parking areas) etc. to be established for the site and each activity area (i.e. daily through pre-start briefing) - UHF radio used by all mobile plant operators & supervisors for managing plant and vehicle operations - Establish project specific protocols (i.e. dedicated UHF channel, stand down process) for managing plant, LV/Buggy and worker movements through "RED ZONES" where mobile plant is operating - Speed limits (Access Road = 40km/hr) (Within Site & Between Blocks = 15km/hr) - Plant operator licensing and verification of competency (VOC) process - Plant Inspected & accepted as per project plant specification matrix - Establish safe operating procedure or JHA / SWMS for mobile plant operations - Establish safe operating procedure or JHA / SWMS for refuelling operations in the field - Mobile phone policy - prohibited use by workers in the construction areas and whilst operating plant and vehicles (communicated at induction) - Pre-start/ SWMS deliver method of separation of plant & people & details of vehicle movements - Mobile plant fitted with warning devices such as flashing lights and audible alarm for reversing plant - Project induction to includes Plant Safety module (Plant specific blind spot buffer zones defined) - Where spotters are absolutely necessary they must be specifically trained and deemed competent	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	**Action 1:** Establish a procedure / protocol for field based refuelling activities **Responsibility:** Con Catsicas **Action 2**: Establish a protocol for "RED ZONE" where mobile plant is operating **Responsibility:** Moran Stark
8																				
9	**4**	**Collision between heavy mobile plant, light vehicles and site bus (e.g. utes)**	All Stages of the Project	Vehicle Movement Plan not implemented, enforced or followed Lack of delineation and exclusion zones between light vehicles and mobile plant Traffic control systems not implemented or managed Operator/driver distraction eg; mobile phone Reversing plant Poor visibility (fog, rain, smoke, dust) Restricted line of sight Communication less than adequate - Radio contact, visible communication Plant design: Plant blind spots, poor operator visibility or poor hazard detection Inexperienced plant operators Operator Fatigue Poor quality of haul road - wearing surface - Design (dust supression) Speeding	LV / buggy Crushed Resulting in Fatality; Plant / Vehicular damage	4	Critical	L	Likely	H	High	**HCP 02: Mobile Plant** **ABOVE THE LINE CONTROLS** - Utilise physical barriers or windrows to separate LVs / Buggies from heavy mobile plant where possible (i.e. restrict mobile plant entering area where light vehicles may operate) - Consider one way flow of plant / vehicle movements where possible (Site Vehicle Movement Plan) - Provide raised median or windrow built to minimum half the wheel height of the biggest wheel where possible to prevent head on collisions - Physical barrier segregating vehicles/plant - two way traffic flow **BELOW THE LINE CONTROLS** - Identify type & location of barriers to be established (i.e around plant or general operating area). - If activity occurring over large &/or dynamic area- Barrier suitability to be reviewed frequently & upgraded as required - Vehicle Movement Plans (VMPs) highlighting identify paths of travel for plant and people, designated parking areas (REVERSE PARKING ONLY), speed limits, laydown areas, signage (e.g. speed signs, reverse parking signs in parking areas) etc. to be established for the site and each activity / work area (i.e. daily through pre-start briefing) - Establish project specific protocols (i.e. dedicated UHF channel, stand down process) for managing plant, LV/Buggy and worker movements through "RED ZONES" where mobile plant is operating - Plant operator + LV licensing and verification of competency (VOC) process - Plant Inspected & accepted as per project specification matrix - Speed limits (Access Road = 40km/hr) (Within Site & Between Blocks = 15km/hr) - Establish safe operating procedure or SWMS for mobile plant operations - Mobile phone policy - prohibited use by workers in the construction areas and whilst operating plant and vehicles (communicated at induction) - Pre-start deliver method of separation of plant & people & details of vehicle movements - Project induction includes Plant Safety module	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2						Risk Rating							Responsible Person First Solar	Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact		Consequ-ence		Likelihood		Rating	Risk Mitigation			Severity		Likelihood		Rating	Comments
10													Site Supervisor							
11	5	**Collision between items of mobile plant**	All stages of the project	Vehicle Movement Plan not implemented / enforced or followed Multiple plant movements in close proximity to one another (e.g. in restricted area) Reversing plant Poor Visibility (fog, rain, smoke, dust) Restricted line of sight Failure/lack of communication (i.e. Radio contact) Plant Design: Plant blind spots, poor operator visibility or poor hazard detection Inexperienced plant operators Plant Failure Poor quality of haul road - wearing surface - design	Injuries requiring medical attention, Significant plant damage	2	Moderate	L	Likely	M	Medium	**HCP 02: Mobile Plant** **ABOVE THE LINE** - Utilise physical barrier to separate people and/or LV's from plant (i.e. restrict mobile plant entering area where people or light vehicles may operate) **BELOW THE LINE** - Where physical 'solid' barriers are not practicable, identify type & location of delineation / exclusion barriers to be established (i.e around plant or general operating area) - Where activity occurring over large, dynamic area- barrier suitability to be reviewed frequently & upgraded - Speed limits (Access Road = 40km/hr) (Within Site & Between Blocks = 15km/hr) - Dust management (i.e. Active dust suppression) Plant Safety: - Competent Plant Operators - Operator must be assessed as competent through VOC system before commencing work. - Site VMPs developed /Reviewed / Updated regularly. Site VMP's to identify paths of travel for plant and people, designated parking areas (REVERSE PARKING ONLY), speed limits, laydown areas, signage (e.g. speed signs, reverse parking signs in parking areas) etc. to be established for the site - An Activity/ Area VMP developed to provide vehicle movement details relevant to activity/ work area (e.g. designated parking areas, restricted Turning movements/Reversing of the various types of plant) - Pre Work briefings to ientify any adjacent / other mobile plant activity in work area - Mobile plant fitted with flashing lights and audible alarm for reversing plant - UHF radio required in all mobile plant + Supervisors. - Establish project specific protocols (i.e. dedicated UHF channel, stand down process) for managing plant, LV/Buggy and worker movements through "RED ZONES" where mobile plant is operating - Inducton provided to ALL personnel includes Plant Safety module - Mobile phone policy - prohibited use by workers in the construction areas and whilst operating plant and vehicles (communicated at induction)	Site Supervisor	2	Moderate	U	Unlikely	M	Medium	
12	6	**Collision between mobile plant/vehicles and fixed structures/installations**	Deliveries and unloading O&M materials Trenching and installation of cabling Driving on site to undertake monitoring and or repairs	Operating plant/Moving plant in areas adjacent to structures / installations (e.g. tables, combiner boxes etc.) Structures/Installations not physically protected Unplanned movement of plant/equipment	Significant damage to structures / installations, injuries requiring medical attention, Damage to plant	2	Moderate	V L	Very Likely	H	High	**ABOVE THE LINE CONTROLS** - Utliise hard barricading where possible - separating vehicles and plant from structures/infrastructure (e.g. combiner boxes, site sheds etc) which has been installed - Lighting installed to increase visibility early in morning and late afternoon (e.g. car park areas) **BELOW THE LINE CONTROLS** - Management/Supervision review when visibility conditions are poor (e.g. rain/fog) - Site VMPs Developed /Reviewed / Updated regularly. - Site VMPs developed /Reviewed / Updated regularly. Site VMP's to identify paths of travel for plant and people, designated parking areas (REVERSE PARKING ONLY), speed limits, laydown areas, signage (e.g. speed signs, reverse parking signs in parking areas) etc. to be established for the site - An Activity/ Area VMP developed to provide vehicle movement details relevant to activity/ work area (e.g. designated parking areas, restricted turning movements/reversing of the various types of plant) - Establish project specific protocols (i.e. dedicated UHF channel, stand down process) for managing plant, LV/Buggy and worker movements through "RED ZONES" where mobile plant is operating - Positive communications to control all mobile plant movements by UHF - Use of spotters around structures etc. only where absolutely necessary. Spotter must be specifically trained and assessed as competent. - Speed limits (Access Road = 40km/hr) (Within Site & Between Blocks = 15km/hr) - Competent Plant Operators - Operator must be assessed as competent through VOC system before commencing work. - Establish safe operating procedure or SWMS for mobile plant operations - Mobile phone policy - prohibited use by workers in the construction areas and whilst operating plant and vehicles (communicated at induction)	Site Supervisor	2	Moderate	U	Unlikely	M	Medium	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2						Risk Rating							Responsible Person First Solar	Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation		Severity		Likelihood		Rating		Comments
13	7	**Collisions involving vehicles - General/Travel to & from Site**	All stages of the project	Driver fatigue Driver behaviour Poor vehicle management Sub-standard road conditions Sub-standard or poorly maintained vehicles	Vehicle incidents resulting in serious injuries / fatalities	4	Critical	L	Likely	H	High	**ABOVE THE LINE CONTROLS** - Camp constructed to accommodate workers locally & reduce driving - Fly-in-Fly out strategy + provision of bus transport to/from Airport in Dubbo - AGL upgrade to site access from Barrier Hwy to include accelaration and decelaration lanes and associated signage - Engage local drivers for bus transport to and from site to ensure familiarity with roads for bus transport - PSSP to include a description of the minimum safety features required for buses and any LV's which will enter and be used on site - Site Vehicles procured / hired by First Solar shall be Australian Design Rule compliant in all areas of mechanical, design and safety features or international equivalent. -Site Vehicles procured / hired by First Solar selection shall be based on risk assessment, taking account of tasks, application, environment, Principal (AGL) requirements and Australian New Car Assessment Program (ANCAP) rating three and above. **BELOW THE LINE CONTROLS** - Traffic Management Plan developed for the project by a competent traffic engineer. (police escorts and public notices about the timing and likelihood of delays for heavy equipment movements to site) - AOD and fatigue management programs to monitor and manage driver behaviours such as fatigue, dangerous driving and the use of alcohol or drugs. - Project expectations in relation to drivers behaviour to be communicated at project induction - Prior to any LV entering site, an appointed competent person shall assess the LV to ensure that it meets the requirements of the operating and design specification for the site. - Drivers of light vehicles on site shall conduct a 'pre-start' inspection to site and company requirements which include checking of key safety items (e.g. lights, indicators, horn, tyre condition, wipers, seatbelts, etc.) and recording the inspection. - Systems shall be in place to ensure that risks associated with vehicle / bus journeys are identified managed and controlled, including a Journey Management Plan (JMP) when applicable. - The JMP shall include but not be limited to an effective communications system, journey monitoring at both ends of the journey, environmental risks, fatigue management and competency. - A formal inspection and preventative maintenance system shall be implemented to ensure that vehicles are maintained in a safe and roadworthy condition. - Any deficiencies detected that may affect vehicle safety shall be reported and tagged out of service. - All repairs shall be performed by an authorised and competent person. - Supervisors are to inspect the log books of heavy vehicle drivers delivering materials to the project to ensure compliance with driver fatigue requirements (addressed in the PSSP) - A system shall be in place to ensure that loads do not exceed rated gross vehicle mass (GVM), and are adequately secured prior to leaving site.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
14																				
15	8	**Collisions between vehicles and Wildlife - General/Travel to & from Site**	All stages of project	Travelling through rural areas heavily populated with wildlife (e.g. Kangaroos) Travelling at dawn and dusk Travelling at night time	Serious injuries; Significant vehicle damage	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Site Vehicles procured / hired by First Solar shall be Australian Design Rule compliant in all areas of mechanical, design and safety features or international equivalent. -Site Vehicles procured / hired by First Solar selection shall be based on risk assessment, taking account of tasks, application, environment, Principal (AGL) requirements and Australian New Car Assessment Program (ANCAP) rating three and above. **BELOW THE LINE CONTROLS** - Project expectations in relation to driver behaviour to be communicated at project induction + reminder to exercise caution if travelling to and from the project at dawn or dusk	Site Supervisor	3	Major	U	Unlikely	M	Medium	

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
16	9	**Loss of Load during Transport to and from Site**	All stages of project	Poorly secured loads Loads move in transit Incorrect / inadequate load restraints used Poorly maintained load restraint devices Workers lack training and knowledge in the selection and use of load restraint devices Human factors (e.g. workers hurrying to pack up and leave site at the end of a shift or roster)	Serious injuries; Significant vehicle damage	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - All loads are to be securely restrained during transport as per the requirements of the National Transport Commission Load Restraint Guide and by using only approved and appropriately rated chains, straps and lashings (i.e. load restraint devices). Blue and Yellow "Parramatta Rope" is not permitted for use on the project - Ensure that only indirect or double action load binders are used on chains - Ensure loose items are stored in a segregated storage compartment and are not carried unsecured in the passenger compartment of any vehicle - Only tow trailers if the vehicle has a properly designed towbar and trailer coupling with a certified weight rating - the loaded mass of the trailer must not exceed the load capacity of the towbar and trailer coupling and must be within the vehicle manufacturer's prescribed towing limits - Tarpaulin covers or nets should be applied over the top of cargo/loads liable to be blown off during transport. **BELOW THE LINE CONTROLS** - Project expectations for securing loads to light vehicles / trucks to be communicated to workers and contractors at induction - Subcontractors are to provide First Solar with a register of load restraint devices and provide evidence that they are regularly inspected and maintained as per OEM requirements - Delivery driver induction process. First Solar reserves the right to refuse entry for vehicles with loads which are inadequately secured or not as specified (e.g. palletised, pre-slung etc.) - Project health and safety inspections and task observations to address subcontractors vehicles and the securing of loads - Workers responsible for securing loads to light vehicles / trucks for transport shall be adequately trained and instructed in load restraint techniques	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	
17																				
18												Excavators & Earthmoving Machinery - Earthmoving equipment must only lift loads that are within its rated capacity (i.e. the mass of the lifted load and the lifting attachments at maximum lift point radius) - only use attachments identified on the load chart - ensure the rated capacity/working load limit (WLL) is permanently displayed in a prominent position near the lifting point - ensure that a load chart is mounted inside the operator's cabin - burst protection is to be fitted to the boom and dipper arm hydraulics (where attached) of any mobile plant used as a crane. - unless a designated lifting point is fitted elsewhere, loads should only be suspended from the manufacturer's designated lift point on the boom or the quick-hitch if fitted.								

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2						Risk Rating							Responsible Person First Solar	Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation		Severity		Likelihood		Rating		Comments
20	**10**	**Collapse of Excavation/ Trench**	Trench/cabling repairs during operations and maintenance phase	Lack of consideration of ground conditions and failure to conduct risk assessment Failure to engage Geotech Engineer for excavation/trench >1.5m or when faced with Poor ground or sub-Soil conditions Inadequate benching/battering Inadequate shoring Spoil placed in close proximity of trench Plant and vehicles loading zone of influence Poor weather conditions Failure to monitor/inspect condition of trench	Worker crushed resulting in serious personal injury or fatality	4	Critical	U	Unlikely	H	High	**HCP 04: Excavation and Trenching** **ABOVE THE LINE CONTROLS** - Safety in Design consideration for requirement of trenching to establish undergound services versus above ground services - Safety in Design Consideration (i.e. trench depth for services < 1500mm) - Engage Geotechnical Engineer to assist the project (as required) - Excavations and trenches > 1.5 metres in depth, where entry is required, shall either be shored, battered back or benched unless a geo-technical engineer confirms in writing that the excavation is stable and any conditions set by the engineer are followed. - Excavations and trenches < 1.5 metres in depth with unstable rock or soil and where access is required shall be shored, battered back or benched. - Each bench cut into the side of the excavation or trench must be no higher than it is wide. Step dimensions are to be suitable for the soil type and be no greater than 1.5 metres (or unless otherwise approved by geotech). - Battering is to be suitable for the soil type and be at an angle of 45° or less to the horizontal and start no higher than 1.5 metres above the bottom of the trench - Non-proprietary shoring is to be designed by an engineer and installed by trained personnel only after a competent person has inspected the trench, assessed the shoring and approved the use of the shoring. - Wherever practicable, a barricade or hoarding, 900mm high is to be erected to exclude entry to trenches of depth 1m or more where other on site personnel may be at risk due to its location and accessibility. - Wheel stops / windrows to be used to be prevent plant, vehicles from accessing the edge of trenches / excavations - Clearly marked covers suitable to sustain likely loads are to be placed on unattended excavations and secured where practicable on site. **BELOW THE LINE CONTROLS** - Permit to Excavate to be completed and issued by an authorised permit issuer / coordinator prior to any excavation activities being undertaken on site - Contractor SWMS reviewed and approved for any work involving excavation work > 1.5m deep and that it identifies and details controls for excavation collapse, falling objects, falling into the excavation & inhaling contaminated air.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
21												- Competent person (i.e. Supervisor) is to undertake, as a minimum, daily inspections of trenches and excavations and details of these inspections are to be recorded in an excavation log on site. A competent person is someone trained and assessed as competent in the First Solar 'in-house' trenching and excavation training module or a course approved by National HSE Mgr - Barricades and signs (are to be used at safe distances (e.g. 1 metre) from edges to protect unattended excavations that cannot be practicably covered. - Petrol driven machinery is not to be located in or near excavations and trenches. Plant and paths of travel / 'no go zones' to be addressed by the activity specific VMP - A safe means of access and egress is to be provided into excavations and trenches requiring access. Ladders providing a safe access and egress are to be placed in every 9-metre length of trench where workers are required to work. - Mobile plant, materials and spoil is to be kept at least 1000mm from the sides of a trench or excavation or at distances that ensures they do not endanger the stability of the trench or a person present below. - Emergency Response Plan to include project specific procedures for managing the collapse of a trench or excavation.								
22	**11**	**Exposure to Lightning strike**	All stages of the project	Electrical Storms	Equipment damage, fires and electrocution	4	Critical	V U	Very Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Installation of lightning rods - Lightening protection design to include surge protection **BELOW THE LINE CONTROLS** - Construction Manager and Project HSE Manager to monitor weather channels - Lightning meter/ monitoring equipment to be procured for use on-site - Electrical storm/lightning response protocols (distance based) incorporated into the project specific Emergency Response Plan - Project ERT members trained in their specific roles and responsibilities as they relate to project specific emergency response protocols - Workers and contractors provided with information and instruction as part of induction, tool-box talks, JHAs / SWMS / Daily Pre-starts.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	

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2	Number	Risk	Project Phase	Cause	Effect/ Impact	Risk Rating						Risk Mitigation	Responsible Person First Solar	Residual Risk Rating						Comments
3							Consequ-ence		Likelihood		Rating				Severity		Likelihood		Rating	
23 24	**12**	**Exposure to Static Discharge**	Refuelling mobile plant Testing and commissioning	Electrical testing (high potential testing) Refuelling	Electrocution Shock Burns Fires Explosions	4	Critical	U	Unlikely	H	High	**HCP05: Electrical** **HCP09: Hazardous Chemicals** **ABOVE THE LINE CONTROLS** - Lock out/Isolation and tagging processes (LOTO) - Grounding and bonding of refuelling systems / fuel storage tank complies with AS 1692 which specifies the requirements for design and construction **BELOW THE LINE CONTROLS** - Diesel fuel used where possible - Suitable Fire extinguishers are positioned based on the assessment of a competent person - Equipment or vehicles turned off prior to refuelling - Electrical Specific PPE defined in JHAs/SWMS - Authorised and Qualified Electricians	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
25	**13**	**Exposure to Electricity - General/Electrical tools/equipment/generators**	All stages of the project	Use of damaged and/or faulty electrical equipment (Tools, Leads, Temporary Distribution Boards) Failure to install/use earth leakage protection devices Failure to visually inspect tools / equipment prior to use Failure to conduct routine testing & tagging Placing/use of leads & equipment in hostile environments (Mechanical, Chemical, Thermal damage) Leads in damp/wet areas	Electrocution & Fatality	4	Critical	U	Unlikely	H	High	**HCP 05 - Electrical Work** **ABOVE THE LINE** - Only equipment that complies with the equivalent of the Australian Standards AS/NZS 3000 and AS/NZS 3012 is to be allowed on the Nyngan Solar Power Station Project - Work on low voltage electrical installation must only be done by a qualified electrician. - No Live work is permitted. Isolated circuits are to be treated as live until a test for dead (not live) has been completed - Approved earth leakage protection (RCD) will be provided for all circuits - Temporary distribution(switch) boards will have appropriate signage and be fixed on a pole, post, wall, floor or other structure, lockable (for isolation purposes), weatherproof and marked with the source of the supply and where it originates from. - If more than one switchboard is located on a site, markings must be provided to distinguish one switchboard from another. - All electrical leads will be secured off the ground by insulated hooks and/or lead stands to protect against damage. - Electrical socket-outlets on generators must be protected by RCD not exceeding 30 mA and should be connected in accordance with AS/NZS 3012. **BELOW THE LINE** - All construction wiring, switchboards and transportable structures must be inspected and tested by a licensed electrical worker (electrician) following the initial installation and in a period not exceeding six months - All other electrical equipment including power tools, flexible cords, cord extension sets (extension leads) and portable socket outlet assemblies and portable RCDs must be tested and inspected according to the methods in AS/NZS 3760 and in a period not exceeding three months. - No electrical equipment is to be used or be in place ready for use without a current test and tag - Non-compliant equipment must be withdrawn from service immediately and labelled with suitable warning against further use. If sent for repairs, it must be re-tested once returned to site. - Electrical testing and tagging performed only by qualified electricians. records of inspection and testing will be maintained in an Electrical Equipment Register. - JHA / SWMS require visual inspection for tag and damage prior to use of any electrical tool/lead. - Routine inspections of electrical switch boards, leads,power tools by supervisors and safety advisors.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
26																				

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
27	14	**Exposure to Electricity - Electrical supply systems (i.e. install, commissioning, maintenance)**	Servicing and maintaining mobile plant Site Offices / Sheds / Amenities - Electrical Installation, Commissioning and ongoing maintenance External Lighting - Install/Commissioning Testing and commissioning Operations and maintenance phase	Poor/inadequate safety in design (functional safety) Inadequate protection of energised conductors Inadvertant re-energisation of previously isolated energy source Failure of permit to work system Conducting 'Live' electrical work	Electrocution Fatality	4	Critical	L	Likely	H	High	**HCP 05 - Electrical Work** **ABOVE THE LINE CONTROLS** - Only equipment that complies with the equivalent of the Australian Standards AS/NZS 3000 and AS/NZS 3012 is to be allowed on the Nyngan Solar Power Plant project. - Work on low voltage electrical installation must only be done by a qualified electrician. - No Live work is permitted. Isolated circuits are to be treated as 'live' until a test for dead (not live) has been completed - Lock out and Isolation practices (LOTO) - All works are subject to a Energy Isolation Permit being in place managed by competent authorised persons - Approved earth leakage protection (RCD) will be provided for all circuits - Generators supplying a fixed installation will be installed and tested by a licensed electrical worker / contractor in accordance with the requirements of the Australian/New Zealand Standard, AS/NZS 3000 – 2000 Wiring Rules **BELOW THE LINE CONTROLS** - EPC LOTO procedures which have been developed specifically for First Solar - Energy Isolation Permit - an Energy Isolation Permit to work on electrical equipment, issued by an Authorised Person (AP) - Permit Issuers / Coordinators to be trained and assessed as competent in the First Solar in-house training module on issuing permits + the EPC LOTO training program - Permit acceptors (e.g. Supervisors) to be trained and assessed as competent in the First Solar in-house training module on working in accordance with permits + the EPC LOTO training program - Electrical workers performing work will be trained and deemed competent in the EPC LOTO training program - Provision of specific isolation procedures, personal isolation locks and danger tags - HV switching procedures developed in consultation with key stakeholders - Engerised sections to be excluded through creation of 'red roped energised zones' (Maps showing Energised sections communicated at Tool-Box and placed on designated notice boards) - JHA / SWMS for electrical install, maintenance and commision works - Provision of suitable Arc Flash PPE - Transfer of process from electrical to generator - to be managed by electrical workers trained and instructed in a MOP + JHA for the process - Emergency Response Plan to include site specific response protocol for electrocution	Site Supervisor	4	Critical	VU	Very Unlikely	M	Meduim	
28																				
29	15	**Exposure to Electricity - Contacting powerlines/aerial conductors [Note: At site access point off the Barrier Hwy]**	Deliveries of mobile plant and construction materials Tree Cutting and Vegetation Removal Access Road & Internal Road Construction Operations and maintenance phase	Failure to identify overhead services Failure to relocate the Overhead powerlines / services clear of the work area Failure to isolate powerlines / aerial conductors Mobile plant working around live overhead powerlines - contact Selection of plant inadequate Mobile plant encroaching safe approach distances Failure to install physical barriers (horizontal & vertical) Failure to install warning devices & signage No Accredited Person(s) and Safety Observer / Spotter	Electrocution & Fatality; Fires Plant damage	4	Critical	L	Likely	H	High	**HCP 05 - Electrical Work** **ABOVE THE LINE CONTROLS** - Engage with the asset owner and elimate the risk associated with live services by relocating the service (e.g. service connection to the house) clear of the work area - Consider relocating access roads/work areas to eliminate potential of contact with overhead powerlines - If relocation is not possible, consider substituting for items of mobile plant that cannot encroach on the safe approach distance to the service (e.g. an excavator replaced by a drott or trench digger) - Where services could be impacted by construction activities they are to be isolated / protected (as appropriate). Plan the works around a formal outage (Power Outage) - Consider limiting devices on plant (e.g. height restrictors fitted to excavators) with the potential to enter the danger zones (Check operation and functionality prior to entering work zone) - Physical barriers used for exclusion zones (e.g. jersey kerbs to prevent entry into exclusion zones, where physical barriers are not practicable establish delineated exclusion zone) **BELOW THE LINE CONTROLS** - Travel ways under overhead powerlines that may be impacted by mobile plant, including delivery vehicles, must have high visibility warning signage to make the powerline proximity clearly visible + include height of contact wire. - Soft barriers & Tiger tails to be considered only where all above the line controls have been explored with the asset owner - Overhead wires spotters trained in Crane & Plant Electrical Safety Course to be used when there is the potential for the accredited persons zone i.e. Safe Approach Distance (SAD) to be encroached - Surveyors As-built plans to include details of all new services - Emergency response plan to include response protocol for contact with aboveground and belowground services and utilities (e.g. powerline / aerial cable strike)	Project Manager Construction Manager & Supervisors	4	Critical	U	Very Unlikely	M	Medium	
30																				

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
31	16	**Exposure to Electricity - Disturbance of Underground Cables**	Excavation and installation of permanent construction site fencing General Earthworks & prep works for access roads, lay-down areas, site sheds, car parks, construction areas etc Access Road & Internal Road Construction (incl. drainage) Construciton of site offices Excavate, place, electrical (and other) services when installing site sheds / offices Trenching and installation of cabling Operations and maintenance phase	Site services (live and disused) not identified prior to work commencing Lack of information on underground essential services provided to the excavation contractor. Fail to expose and verify location / type of service (e.g. potholing) Fail to keep information up-to-date Fail to engage asset owner and establish methods to be adopted to isolate or protect existing assets Failure of Permit to work system for excavation Lack of training in the identification, protection of underground services Lack of procedures and training for dealing with emergency scenarios	Uncontrolled strike resulting in electrocution	4	Critical	UL	Unlikely	H	High	**HCP04: Excavation & Trenching** **ABOVE THE LINE CONTROLS** - All services are to be accurately located using the relevant services drawings i.e. Dial Before you Dig & where excavating on private property, contact the owner or occupier of the premises, land etc about buried cables before starting work. - The location of services is to be exposed and physically verified by a secondary means such as non-destructive potholing, ground penetrating radar, electronic detection of horizontal & vertical location (using suitable device) or hand digging - Utilise physical barricades to protect services and prevent contact/damage **BELOW THE LINE CONTROLS** - Permit to Excavate issued to work crew on-site by an authorised Permit Issuer / Coordinator trained and assessed as competent in the First Solar in-house training module on issuing permits - Trained and competent permit issuer appointed (in writing) by the Project Manager - Permit acceptors (e.g. Supervisors) to be trained and assessed as competent in the First Solar in-house training module on working in accordance with issued permits - Services must have physical identification signage such as type of service, line marking and/or area demarcation - New services as-built and consolidated on site services drawing/register (to be used for future excavations or passed on to owner / operator at the completion of the project) - Spotters to be utilised when digging near power & gas (as required by the utility owner) - Emergency response plan to include response protocol for contacting aboveground and belowground services and utilities (e.g. underground cable strike)	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
32	17	**Contact with underground services - water and telecommunications**	Excavation and installation of permanent construction site fencing General Earthworks & prep works for access roads, lay-down areas, site sheds, car parks, construction areas etc Access Road & Internal Road Construction (incl. drainage) Construciton of site offices Excavate, place, electrical (and other) services when installing site sheds / offices Trenching and installation of cabling Operations and maintenance phase	Site services (live and disused) not identified prior to work commencing Lack of information on essential services provided to the camp construction contractor(s). Fail to expose and verify location / type of service (e.g. potholing) Fail to keep information up-to-date Failure of Permit to work system Fail to engage asset owner and establish methods to be adopted to protect existing assets Lack of procedures for working around services Lack of training in the identification, protection of underground services Incorrect drawings incorrectly identifying services	Loss of services Reputational loss Financial loss	3	Major	L	Likely	H	High	**HCP04: Excavation & Trenching** **ABOVE THE LINE CONTROLS** - All services are to be accurately located using the relevant services drawings i.e. Dial Before you Dig & where excavating on private property, contact the owner or occupier of the premises, land etc about buried cables before starting work. - The location of services is to be exposed and physically verified by a secondary means such as non-destructive potholing, ground penetrating radar, electronic detection of horizontal & vertical location (using suitable device) or hand digging - Utilise physical barricades to protect services and prevent contact/damage **BELOW THE LINE CONTROLS** - Permit to Excavate issued to work crew on-site by an authorised Permit Issuer / Coordinator trained and assessed as competent in the First Solar in-house training module on issuing permits - Trained and competent permit issuer appointed (in writing) by the Project Manager - Permit acceptors (e.g. Supervisors) to be trained and assessed as competent in the First Solar in-house training module on working in accordance with issued permits - Services must have physical identification signage such as type of service, line marking and/or area demarcation - New services as-built and consolidated on site services drawing/register (to be used for future excavations or passed on to owner / operator at the completion of the project) - Spotters to be utilised when digging near power & gas (as required by the utility owner) - Emergency response plan to include response protocol for contacting aboveground and belowground services and utilities (e.g. underground cable strike)	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	
33	18	**Inhalation of Dust and other Airborne particles**	All Project Stages - travel on access roads General Earthworks & prep works for access roads, lay-down areas, site sheds, car parks, construction areas etc Access Road & Internal Road Construction (incl. drainage) Trenching and installation of cabling	Concrete cutting/breaking Insufficient dust supression Exposure naturally occuring crystalline silica Exisitng property restoration/repairs (House)	Acute or chronic respiratory illness, complaints from neighbours	2	Moderate	U	Unlikely	M	Medium	**SMP: 14 Workplace Exposure Monitoring & Health Surveillance** **ABOVE THE LINE CONTROLS** - Ensure the design specification for access roads considers the type and size of vehicles / plant, grading of materials, base material, road drainage, camber etc - Risk Assessment to be conducted by Qualified Occupational Hygienist at the commencement of construction activities **BELOW THE LINE CONTROLS** - Ongoing air monitoring as determined by qualified Occupational Hygienist - Ongoing dust supression measures (e.g. watercarts during earthworks) - Continued mointoring by Supervisors - Task specific dust inhalation PPE as required by JHAs / SWMS - Project PPE requirements include eye protection in all areas other than site offices, crib sheds - communicated to workers at induction - Health Surveillance procedures	Site Supervisor	2	Moderate	VU	Very Unlikely	L	Low	

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
34	19	**Exposure to an uncontrolled release from systems under pressure eg: Hydraulic fluid, air**	Operation of installed equipment eg transformers	Inadequately maintained plant/equipment Incompatible/not fit for purpose hoses, fittings, permanent fixtures	Injury requiring medical treatment, LTI;	2	Moderate	U	Unlikely	M	Medium	**HCP: 02 Mobile Plant** **ABOVE THE LINE CONTROLS** - Plant risk assessment process (including review and approval by First Solar) - Project specific mobile plant specification matrix - Plant acceptance process administered by qualified fitter / mechanic or members of the HSE team trained and assessed as competent in a tailored plant inspection and assessment course delivered by an RTO - Hose protection on high risk hoses on plant - Physical barrier seperation of personnel from mobile and fixed plant wherever practicable **BELOW THE LINE CONTROLS** - Regular and routine inspection and maintenance of mobile plant in accordance to OEM requirements - Proactive weekly inspections (i.e. site health and safety inspections) prompt checks to ensure plant is being maintained in accordance to OEM requirements - Proactive Quarterly inspections of all mobile plant on site. Compliant plant issued with a new plant acceptance sticker for the new Quarter. - Provision of Spill kits, spill response procedures and training for operators - Project Emergency Response Plan (ERP) includes a project specific response protocol for oil, fuel, chemical spills	Site Supervisor	2	Moderate	VU	Very Unlikely	L	Low	
35	20	**Exposure to Harmful Biological Agents / Contaminants**	All Stages of the project Cleaning site sheds & amenities	Exposure to bloodborne pathogens Exposure to biological content Treating injured personnel - First Aid Sewerage treatment plant on site Poor hygeine habits	Blood borne diseases Hepatitis viruses Skin infections Dermatitis	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Full Health and Hygeine Risk Assessment by a qualified and competent Occupational Hygienist **BELOW THE LINE CONTROLS** - Necessary health surveillance and monitoring program (e.g. site cleaners) - First Aid facilities and kits on site with appropriate equipment - Hep A-B Vaccinations - for personnel working near sewerage treatment plant? Is this applicable for the Solar Power Station - Hygeine awareness for personnel included in tool-box talks	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	
36	21	**Exposure to uncontrolled Fire (e.g. grass fires / site shed / building fire at site / Bushfire)**	All stages of the project	Sub-standard storage of hazardous chemicals Electrical faults Lack of emergency equipment Bush / grass fire spread from nearby areas	Fatality Permanent injury	4	Critical	V U	Very Unlikely	M	Medium	**CMP17: Emergency Preparedness** **ABOVE THE LINE CONTROLS** - Design of site accommodation and infrastructure to Australian Standards and Building Codes - Consult with NSW Firebrigade about the need to construct fire breaks around the the Solar Power Plant Project Site **BELOW THE LINE CONTROLS** - Bushfire Manaement Plan to be developed in consultation with NSW Fire Brigade (in Nyngan) and the Bogan Shire Council - Emergency Response plan to include site specific response protocols for uncontrolled fires (e.g. bush fires) developed in consultation with the NSW Fire Brigade (in Nyngan) and the Bogan Shire Council - Establish an Emergency Response Team and Emergency Control Centre (in training & induction room) to be used as the command centre in the event of a critical emergency situation. - FS to engage NSW Fire Brigade, Fire Engineer, or Emergency Consultant to assess the suitability, location and accessibility of emergency equipment for the Nyngan Solar Power Station project. - Hot work permits in place as required - Based on the foreseeable emergency scenarios and the role of First Solar, ERT members will complete a tailored 'in-house' training module including competency assessment - Project Induction to communicate site specific emergency response procedures to workers - Establish and maintain a schedule of drills to test the effectiveness of emergency response procedures. Emergency drills are scheduled at 3-monthly intervals according to the project risks, as identified in the project risk register and the project construction schedule - Ensure designated emergency personnel (e.g. wardens, emergency coordinators etc) are trained in emergency procedures appropriate to their allocated emergency response responsibilities and the degree of risk.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
37												- Hazardous Chemicals Risk Assessments - Hazardous chemicals physically separated from any chemicals or other things that may be incompatible by distance, barriers, or a combination of both barriers and distance - SDS on site/storage locations - Hazardous Chemical Training / Briefing for workers and supervisors - Routine workplace inspections of hazardous chemicals storage and emergency equipment on site - Mobile Plant specification matrix to define fire extinguisher requirements for items of mobile plant used on site								
38	**22**	**Exposure to Dangerous Flora or Fauna e.g. Snakes, and spiders**	All stages of the project	Disturbing of habitat Clearing & Grubbing Access to confined space locations	Fatality, permanent injury, minor injury	4	Critical	U	Unlikely	H	High	**ABOVE THE LINE CONTROLS** - Enagage a competent person (i.e. fauna handler) if relocation is required - Perimiter fencing around site to be established prior to commencing construction - Inspect areas prior to work **BELOW THE LINE CONTROLS** - Conduct First Aid assessment to determine the first aid equipment requirements, numbers of trained first aiders and their qualifications for the Nyngan Solar Power Station (make sure there are workers with remote first aid qualifications and first aid kits suitable for snake bikes) - Supervisors site vehicles / buggies to be fitted with First Aid kits - The project will employ a full time fauna handler (trained) and develop project specific response protocols for reporting and responding to snake sightings - Project inductions and tool-box talks (e.g. Snake awareness sessions with reptile handler) to describe process for managing snake sightings on the project + first response actions - Signage will be used to highlight the locations of any snake sightings - Food bins to have full closing lids - preventing vermin, wildlife and snakes from gaining access - Housekeeping and waste management practices on site to be monitored by Supervisors - Emergency Response Plan to include project specific response protocol for the known fauna in the area (e.g. eastern brown snakes). ERP to include process for an emergency that requires Ambulance Service/Paramedic attention + escalation to air evacuation.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	
39	**23**	**Exposure to working Above or Near Water (Dam on site)**	All phases	Unauthorised access due to a failure to physically protect Dam	Drowning	4	Critical	U	Unlikely	H	High	**ABOVE THE LINE CONTROLS** - Fencing to be erected around Dam along with 'warning' signage	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	Likelihood viewed to reduce an order of magnitude due to fencing and physically protecting the Dam. Consequence remains unchanged.
40	**24**	**Contact with exposed moving parts of vehicle/plant/equipment**	Deliveries and unloading materials during operations	Lack of Plant Risk Assessment Failure to physically protect workers Inadequate guarding/shielding Human error Contact with hand tool moving parts	Fatality, permanent injury, minor injury	4	Critical	U	Unlikely	H	High	**HCP02: Mobile Plant** **ABOVE THE LINE CONTROLS** - Project specific mobile plant specification matrix - Plant Risk Assessments and review and approval process - Mobile plant acceptance process administered by qualified fitter / mechanic or members of the HSE team trained and assessed as competent in a tailored plant inspection and assessment course delivered by an RTO (and approved by the National HSE Manager) - Physical 'solid' barrier protection to separate people from plant - Guarding on rotating parts - Isolation process - ie: LOTO for maintenance,servicing and refuelling activities - Use remtoe controlled plant where possible eg when using grinders or chippers (for pallet cardboard mulching)+W54 **BELOW THE LINE CONTROLS** - Where physical 'solid' barriers are not practicable, identify type & location of delineation/exclusion barriers to be established (i.e around plant) - OEM specific plant pre-start inspections - Operator Verification of Competency process (VOC) - SWMS and/or standard operating instructions established for plant/equipment - Proactive weekly inspections (i.e. site health and safety inspections) prompt checks to ensure plant is being maintained in accordance to OEM requirements - Proactive Quarterly inspections of all mobile plant on site. Compliant plant issued with a new plant acceptance sticker for the new Quarter.	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	

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3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
41	25	**Struck by projectiles or ejected materials**	Operations and maintenance activities	Use of Air tools (i.e. compressed air) Grinder wheel failure Mechanical failure of plant Nail guns	Permanent injury medical attention minor injury	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Supervisors must inspect the condition of plant and equipment prior to introduction to site - Guarding on grinders - Exclusion zones where explosive power tools are in operation **BELOW THE LINE CONTROLS** - When using compressed air, couplings must have safety clips fitted to them to prevent inadvertant uncoupling when underpressure - no tie wire - Trained and authorised personnel to use explosive power and or power tool ie: Nationally accredited course for hand tools / power tools or in-house developed training and competency assessment - Plant and equipment maintenance and inspection schedule as per OEM requirements - Daily pre-operational inspections by competent person prior to operation. - Damaged or fauly equipment is to be tagged 'out of service' and quarantined or remove from site - JHA/SWMS or SOP for all power and hand tools - PSSP to include a procedures for managing work involving compressed air + power / explosive power tools - Appropriate PPE worn as per activity risk assessment - eg; double eye protection when grinding or cutting, hearing protection	Site Supervisor	2	Moderate	U	Unlikely	M	Medium	
42																				
43	26	**Exposure to cuts / punctures / pinches from hand tools, plant, objects.**	Operations and maintenance activities	Exposed re-bar, stakes Pinch points Pinch point during rigging/lifting Receiving goods - unpacking	Medical attention, minor injury	2	Moderate	L	Likely	M	Medium	**ABOVE THE LINE CONTROLS** - Plant Risk Assemements address all relevant phases of the plant lifecycle + review and approval by FS - Mobile plant acceptance procedures for mobile plant arriving to site - Guarding and shrouds around pinch points (mobile plant, equipment) **BELOW THE LINE CONTROLS** - Cut resistant gloves and sleeves - Rating Cut 5 and above for workers involved in fixing module tables to the tilt brackets and installing solar cartridge assemblies on the tables - Fit for purpose cutting tools ie; self retracting Stanley Knives	Site Supervisor	2	Moderate	L	Likely	M	Medium	
44	27	**Worker Fatigue and Fitness for work**	All stages of the project	Pre-exising medical conditions Workers allowed to exceed max hours per shift and max number of continuous shifts Failure to consider distances travelled by workers to and from work Heat and strenuous work activities	Serious injury, medical attention	3	Major	L	Likely	H	High	**HCP11: Heat Stress** **HCP 27: Fatigue Management** **ABOVE THE LINE CONTROLS** • Camp is being constructed to accommodate workers locally to reduce driving • Fly-in-Fly out strategy + provision of bus transport to/from Airport for workers • Engage local drivers to ensure familiarity with roads for bus transport of workers to and from site • Workers will have access to air conditioned shelters for eating meals and taking breaks, and to protect them in adverse weather conditions **BELOW THE LINE CONTROLS** • Pre-employment medical screening prior to commencing work on the project • Project specific fatigue management plan / procedure • Maximum Work Hours in a 24hr period = 12 hrs • Minimum Break Length between Shifts = 10hrs • Maximum Number of Shifts Worked in a row = 21 • Minimum Number of Days off per 28 days = 7 • As soon as the need to work more than 12 hours is identified, a suitably trained and authorised person (e.g. Construction Manager or Supervisor) will undertake a formal fatigue risk assessment • Fatigue Observation and assessment process to be used for the following assessments: Random assessment; With cause (post incident); Reasonable suspicion; Self-identification • Project induction to be used to communicate fatigue signs, symptoms and risk management procedures to workers and contractors • Site monitoring of work crew hours by supervisors via site access / induction system • Supervisor training and instruction - 'in-house' Fatigue Management training module	Site Supervisor	3	Major	UL	Unlikely	M	Medium	

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2	Number	Risk	Project Phase	Cause	Effect/ Impact	Risk Rating						Risk Mitigation	Responsible Person First Solar	Residual Risk Rating						Comments
3							Consequ-ence		Likelihood		Rating				Severity		Likelihood		Rating	
45												• Employee Assistance Program • Project specific travel and journey management requirements to be included in the project site safety plan • PPE (include cool vests/camel backs) • Regular rest / hydration breaks • Provide cool drinking water at the work site, and encourage 200ml every 15 to 20 minutes for all workers during hot periods of the day • Providing workers with information, instruction & training on recognizing heat related illness & on first aid. •Emergency response plan to include site specific response protocol for heat illness	Site Supervisor							
46	28	**Working under the influence of Drugs and Alcohol**	All stages of the project	Drinking during working hours Drug & substance abuse Regular heavy drinking outside working hours Lack of D&A policy and program Lack of D&A testing	Serious injury, medical attention	3	Major	L	Likely	H	High	**SMP 26 - Alcohol and Other Drugs** **ABOVE THE LINE CONTROLS** - Pre-employment medical screening process to include drug and alcohol screening **BELOW THE LINE CONTROLS** - Drug and Alcohol testing program and procedures developed by competent person to comply with the requirements of AS4308 for urine screening - D&A Testing Program to include: * Self Testing - breathaliser at camp * Mandatory alcohol testing of all workers, visitors, delivery drivers on access to site * Random testing - target approximately 10% of the workforce on a monthly basis (note: contract needs to be established with a preferred provider for drug testing) * Post incident testing * Reasonable cause testing - Regular inspection and calibration of breathaliser units as per the OEM requirements - Personnel administering Alcohol tests with hand held breathalyser are to receive training from the supplier in the use of the device + training and instruction in SMP26 Alcohol and Other Drugs - 'in-house' training module as required by SMP26 to be delivered to the Project Manager, Supervisors and HSE team. - AOD information and instruction provided as part of the induction and ongoing through tool box talks - Self identification process and Employee assistance program - Project Site Safety Plan to incorporate a disciplinary process for responding to positive drug and alcohol test results	Site Supervisor	3	Major	UL	Unlikely	M	Medium	
47																				
48	29	**Exposure to Psychological Stressors/Distress (i.e. workplace stress, bullying harassment, traumatic event)**	All stages of the project	Unreasonable behaviour directed towards someone Unwelcome conduct Verbal abuse Spreading rumours about someone Name calling Practical jokes Sexual harassment	Psychological damage / injury	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** N/a **BELOW THE LINE CONTROLS** - Bullying and harassment to be addressed in the project induction. the induction will address: how individuals can respond to workplace bullying (workers, bystanders and managers; the process for reporting workplace bullying &/or harassment; the process for responding to reports of workplace bullying; the consequences for not complying; & where to go for more information and assistance. - Issue resolution procedures - EAP Program - Contractor Management procedures and Hazard Non-Compliance (HNC) Reports for non-compliance issues involving contractors	National HSE Manager	3	Major	U	Unlikely	M	Medium	

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49	30	**Undertake hazardous manual task (Pushing / Pulling objects / materials)**	Operations and maintenance activities	Handling of heavy materials (e.g. tables), sustained awkward postures, repetitive / sustained actions Use of heavy tools and equipment	Musculoskeletal injury - Long term illness, medical, days off work	2	Moderate	L	Likely	M	Medium	**HCP 10: Manual Tasks** **ABOVE THE LINE** - Where practical, liaise with suppliers to arrange for construction materials to be palletised, pre-slung etc to minimise manual handling during unloading on site - Mechanical Lifting/Pulling tools/equipment to be used wherever practicable - Where possible, mobile plant to be used to deliver materials directly to the point of use to minimise manual handling **BELOW THE LINE** - Manual handling training - JHAs / SWMS (e.g. installing tables) - Worker rotation protocols incorporated in established procedures for installing tables	Site Supervisor	2	Moderate	L	Likely	M	Medium	**Action:** EPC team to investigate manual handling options (e.g. below the hook solutions) which may contribute to reducing the risk of manual handling injuries + interaction between workers and plant (forklift / manitou) whilst lifting and placing tables. **Responsibility:**
50	31	**Exposure to Hazardous Chemicals (including gases) - Acute or Chronic**	All stages of the project	Release from equipment as a result of failure of component Refuelling and servicing of equipment Decanting of gases from cylinders or switchgear chambers Incorrect handling, storage, use or application of chemicals Lack of information, training and instruction Elevated exposure levels Pesticides or herbicides or baits used on site Hazardous environment Poor ventilation	Acute or chronic illness; Global warming potential increased	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROL** - Arrange for a qualified Occupational Hygienist to conduct a survey of theNyngan Solar Power Station site upon commencement of construction - Hazardous Chemicals Risk Assessment when procuring any item considered hazardous and/or dangerous - whereever possible substitute hazardous chemicals (e.g. substituting high hazard chemicals like carcinogens, mutagen, reproductive toxicants and sensitisers) with less hazardous chemicals - Site drainage system designed to allow retention of spills on site (e.g. bunds) - Hazardous chemicals must be physically separated from any chemicals or other things that may be incompatible and stored in accordance with SDS requirements **BELOW THE LINE CONTROL** - If required (as a result of a survey or hazardous chemical risk assessment), health surveillance/exposure monitoring requirements and information will be provided to relevant workers through tool-box talks. - Health surveillance/exposure monitoring will be conducted by a qualified medical practicioner. - All storage and handling facilities designed and operated to relevant Australian Standards (e.g. diesel storage tank) - A First aid assessment shall be conducted by a competent person to determine the type, location and accessibility of first aid equipment such as emergency showers / eye wash stations etc - ALL containers in which hazardous substances/dangerous goods are stored shall be appropriately labelled. -Placards must be displayed if dangerous goods are stored in bulk or in packages above the 'placarding quantity' as defined in Schedule 11 of the WHS Regulation. - SWMS / JSA's are specific and incorporate SDS requirements including exposure controls, specific PPE requirements and incident repose protocols. - Hazardous Chemicals Register & SDS's must be available on site - Routine site inspections of hazardous chemical storage arrangements - Spill response kits in designated refuelling areas and on all refuelling and servicing vehicles - CEMP procedures and worker training in spill response - Chemical incidents (e.g. spills) included in Emergency Response Plan to include site specific protocols for responding to oil, fuel, chemical spill	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	
51																				

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52	32	**Exposure to Non-ionising Radiation (ultraviolet, lasers, welding flash)**	UV exposure during all stages of the project	Exposure to lasers UV exposure (sun)	Long term illness, serious injury, medical attention, first aid	3	Major	VU	Very Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Segregated areas established when lasers are in use on the project - Welding activities area to be delinieated where possible (e.g. through establishing a dedicated welding / hot works bay on the projectl site) **BELOW THE LINE CONTROLS** - Welding Screens to be used when hot work being conducted - PPE for welding - Welding Helmets, Jackets, Gloves - Workers provided with Information/Instruction on use, storage and maintenance of activity specific PPE - Ensure personnel engaged to use lasers, welding equipment are suitably trained and assessed as competent - Where possible create shaded areas for workers to work under - PPE - Work helmets to have brims and flaps, dark glasses, high visibility long shirts / long cotton drill pants - Provision of sunscreen on site for workers - Sun safety training and awareness to be included as part of induction and ongoing in toolbox talks - Medical assessments - skin conditions (heat/sun related) - encourage to be conducted	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	
53	33	**Hot Work and Bushfires**	Prep works for lay-down Areas, Site Offices, Site Sheds, Car Parks etc Construction of site offices	Welding Oxy Cutting Grinding	Burns resulting in medical treatment and LTI Fire - surrounding area	2	Moderate	L	Likely	M	Medium	**ABOVE THE LINE CONTROLS** - SiD to promote prefabrication off-site (to eliminate the need for welding / hot works on arrival to the project. - Where hot work is necessary, establishing a dedicated welding / hot works bay on the project site **BELOW THE LINE CONTROLS** - Hot work permit process for spark generating work activities - Hot work permits to be issued by a trained and competent permit issuer / coordinator - If there is going to be a need for Hot Works during the Summer and Total Fire Bans then we will need to engage the NSW Fire Brigade in order to seek an exemption based on our safety management system procedures - Engagement with RFS on regular (Monthly) basis - Emergency response planning eg; Fire watch established, fire extinguishers, water carts, immediate area clean and all flammables removed - Portable screens for welding/grinding - Appropriate activity specific PPE as defined in JHA/SWMS i.e. welding gloves, glasses, hearing protection etc. - Workers received training and instruction in the use and maintenance of activity specific PPE - Awareness of pending bushfire threats	Site Supervisor	2	Moderate	VU	Very Unlikely	L	Low	
54	34	**Exposure to Heat Stress**	All stages of the project	Alcohol intake the night before work shift Medication Poor fitness Pre-disposed to heat exhaustion Type of activity Lack of acclimatization Working in high temperatures & high warm winds Failure to maintain fluid intake	Worker dehydration resulting in heat stress and fatality, medical treatment	4	Critical	L	Likely	H	High	**Heat Stress Plan: HCP 11** **ABOVE THE LINE CONTROLS** - Site layout/design consider whether it would be possible to plan the temporary site offices / welfare facilities to be positioned in an area where shade trees may be able to provide some natural UV protection during breaks - Workers should have access to air conditioned shelters for eating meals and taking breaks, and to protect them in adverse weather conditions. **BELOW THE LINE CONTROLS** - Weather monitoring and project specific guidelines for monitoring work area temperatures using the Wet Bulb Globe Temperature (WBGT). - All workers and supervisors must be provided with awareness level training during the induction. Training is to address the signs and symptoms of heat illness, strategies for preventing heat stress & basic first aid response measures. - Supervisors to participate in an 'in-house' training module on heat stress. This training will include those contained in the awareness level training and the following: * the controls in place for each work zone to managing heat stress factors. * understand responsibilities and when to initiate heat stress controls. * how to appropriately manage employees who present signs of heat illness. - Provide cool drinking water at the work site, and encourage 200ml every 15 to 20 minutes for all workers during hot periods of the day. - Provision of electrolyte replacement fluids as a supplement to water(in moderation) Ready acccess to ice making machines and ice buckets - Regular rest / hydration breaks especially during high risk activities - Provision of adequate rest is required as per the Petroleum Fatigue Management procedure. - PPE (including provision of cool vests/camel backs) - Pre-employment medical screening prior to commencing work on the project - Emergency response plan to include site specific response protocol for responding to heat illness	Site Supervisor	4	Critical	U	Unlikely	H	High	**Action:** Project Manager to work with National Safety Manager and Project Site Manager to monitor heat illness incidents (if any). The rating may drop as monitoring advises of the actual risk onsite. **Responsibility:** Tony McSwaine, Julie Stiglish & Con Catsicas

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55	**35**	**Community (Neighbours) Interaction**	All stages of the project	Lack of communication with Neighbours Failure to communicate emergency response plans where there is a potential for impact to Neighbours	Public and Client Staff injury	3	Major	U	Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Perimeter fencing and secure entry gates (e.g. boom gates, pedestrian turnstiles) to control access to Nyngan Solar Power Plant construction site. - Dedicated pedestrian walkways established as part of the site Vehicle Movement Plan **BELOW THE LINE CONTROLS** - Traffic Management plan to identify any suitable 'lead in' warning signage for traffic movements into and out of the Construction site on the Barrier Hwy - Induction procedure - Visitors Induction - Visitors/ clients are to be under site escort by a fully inducted project representative at all times whilst on site - Consultation and communication program (e.g. traffic management for deliveries to the site) - Principal Constructor Signage with emergency contact details displayed in prominant positions - Construction Site Warning Signage - Landowner gates to be locked at all times - this requirement will be communicated at induction - Where there is the potential for neighbours / other stakeholders to be impacted by emergency situations, ensure that they are briefed on the project specific emergency response procedures	Site Supervisor	3	Major	VU	Very Unlikely	M	Medium	

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
56	36	**Unauthorised Access to Nyngan Solar Power Station**	All stages of the project	Construction site poorly secured Forced entry by member(s) of the public	Serious injury to trespasser, Physical attack / assault to workers & / or Stolen items	3	Major	L	Likely	H	High	**ABOVE THE LINE CONTROLS** - Site Design to ensure adequate perimeter fencing to prevent unauthorised access to the camp construction site - Vehicle and pedestrian gates to be of similar configuration to prevent unauthorised access to site **BELOW THE LINE CONTROLS** - Signs denoting access to the area is restricted clearly visible around the perimeter. - Principal Constructor Signage with emergency contact details displayed in prominant positions - Construction Site Warning Signage to be established and maintained - All perimeter gates kept locked except when required to be opened to permit entry or exit. - Landowner gates to be locked at all times - this requirement will be communicated at induction - Trained and licensed contract security personnel to conduct security patrols when project site is unoccupied - Emergency Response Plan to include project specific procedures for responding to trespass / unauthorised access to the Nyngan Solar Power Station	Site Supervisor	3	Major	UL	Unlikely	M	Medium	
57	37	**Contractor Management failure**	All stages of the project	Lack of contractor capability Failure to have sufficiently skilled and experience resources to effectively manage the contract(s) Lack of recognition of the importance of contractor management Failure to act on contractor underperformance Differing and/or conflicting stakeholder expectations Failure to provide contract deliverables on time, to agreed quality standards Failure to adhere to agreed budget	Serious injury / fatality	4	Critical	L	Likely	H	High	**SMP: 12 Selection & Management of Contractors** **ABOVE THE LINE CONTROLS** - Pre-qualification process - Tender evaluation process - Pre-award alignment meeting with preferred Contractor - Pre-mobilisation workshop ('kick-off' meeting) **BELOW THE LINE CONTROLS** - Regular contractor audits and inspections - Prior to the commencement of work, all contractors must successfully complete the relevant First Solar project (site) safety induction - Hold regular meetings with the contractor to discuss progress, performance and any issues or concerns	Site Supervisor	3	Major	U	Unlikely	M	Medium	
58	38	**Flood**	All stages of the project	Extreme weather and flooding	Affect work schedule, damage to property, access roads	4	Critical	VU	Very Unlikely	M	Medium	**ABOVE THE LINE CONTROLS** - Solar Power Station design to consider 100 year flood elevations - Design specification for access roads and construction area to consider grading of materials, base material, drainage etc **BELOW THE LINE CONTROLS** - FS HSE team aligned with Bogan Shire (Nyngan) Emergency Services (member of ESC) Emergency Response Plan includes project specific response protocol for floods which shall be developed in consultation with local emergency services and the Bogan Shire Council - Emergency response procedures communicated to workers at induction - Site evacuation procedures etc to be posted on the site safety noticeboard(s) - Establish and maintain a drill of emergency response / evacuation exercises. If possible, schedule a critical response mock scenario / desk top drill (for major flooding) to coincide with known wet season for Western NSW	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	

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2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
59	39	**Oil, Fuel, Chemical Spills**	All stages of the project	Discharge of fuel onto surface Discharge of oil onto surface Discharge of Hazardous Chemicals/Substances onto surface Discharges to surface water or ground water Discharges of internal collection/treatment systems	Soil/Surface contamination Harmful fumes Potential fines Loss of reputation	4	Major	U	Unlikely	4	Medium	**ABOVE THE LINE CONTROLS** - Bunded fuel storage areas - Bunded oil storage areas - Self contained secondary storage tanks - Self bunded chemical storage cabinets - Portable bunds/trays - Mobile Plant acceptance process to ensure plant is fit for purpose and well maintained on arrival to the project **BELOW THE LINE CONTROLS** - Routine mobile plant maintenance in accordance with OEM requirements - Proactive weekly inspections (i.e. site health and safety inspections) prompt checks to ensure plant is being maintained in accordance to OEM requirements - Proactive Quarterly inspections of all mobile plant on site. Compliant plant issued with a new plant acceptance sticker for the new Quarter - Emergency Response plan to include site specific response protocol for oil, fuel or chamical spills - Spill kits placed in areas liquids are stored or accessed - Identified workers to receive training and instruction in the use of spill kits - Induction to include spill response requirements - Establish and maintain a drill of emergency response / evacuation exercises as per SMP 17 - Emergency Preparedness and Response. If possible, schedule a mock scenario (for hydraulic oil spill) to coincide with the earthworks phase of the project	Site Supervisor	4	Major	U	Unlikely	4	Medium	
60	40	**Drinking poor quality water**	All stages of the project	Contaminated water lines Contaminated potable water supply	Illness / Infections such as gastroenteritis,	2	Moderate	L	Likely	M	Medium	**ABOVE THE LINE CONTROLS** - Water testing program in place - Water filtration systems fitted to taps - Water Cooler units installed with drinking water supplied **BELOW THE LINE CONTROLS** Captured in the Envrionmental Risk Assessment in the OEMP	Site Supervisor	2	Moderate	L	Likely	M	Medium	
61	41	**Erosion and Sediment Control**	All stages of the project	Lack of planning Lack of awareness surrounding Erosion and Sediment control requirements	Increased erosion and runoff of sediment filled surface water during storm event	3	Major	L	Likely	H	High	**ABOVE THE LINE CONTROLS** - Site design / Layout to ensure (where practicable) that stockpiles are located away from natural drainage areas - Erosion and Sediment Control Plan must include a site layout showing all Erosion and Sediment Control structures and detailed drawings specifying installation requirements. - Stage works to minimising the area of disturbed land and exposed soil **BELOW THE LINE CONTROLS** - Marking out limit of disturbance for the works stage and communicating "No Go" areas (i.e. all other areas) to all site staff via toolbox and maps displayed onsite - Erosion control structures should be inspected at least weekly and following any rainfall event to ensure they remain effective. Records of inspection must kept and made available on request. - Earthmoving plant operators, supervisors and other relevant project staff are made aware via regular toolboxes, prestart briefings and information materials (e.g. posters) of key erosion and sediment controls including the following: * Site factors which affect erosion risk including soil type and structure, the erosive effects of wind and rain, lack of ground cover, trafficking; features of the site erosion and sediment control plan including maintenance of control devices; & Risk of erosion and potential environmental impact	Site Supervisor	3	Major	L	Likely	H	High	

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2						Risk Rating							Responsible Person First Solar	Residual Risk Rating						
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62	42	**Waste Management**	All stages of the project	Waste management requirements not clealry identified and planned for	Hygeine - causing illness Visual - community perception & Loss of reputation, Attract vermin Complaints relating to waste management	3	Major	L	Likely	H	High	**ABOVE THE LINE CONTROLS** - Approved site environmental management plan (Waste Management). The plan will address the waste management hierachy: * Waste avoidance * Waste reuse * Waste recycling * Energy recovery * Waste disposal - Waste management requirements included in impacts and aspects register **BELOW THE LINE CONTROLS** - General waste bins and containers (e.g. food scrap bins, recyclable bins, recyclable paper bins) are to be placed in easily accessible locations at all worksites. Recyclable waste should be stored separately from general waste, ensuring maximised segregation potential to minimise waste sent to landfill - Liquid and solid wastes must be segregated to allow for maximised recycling - Consider fencing for waste storage areas to prevent wildlife access - All lids and seals must be maintained on waste storage receptacles to ensure that the waste does not cause an odour nuisance - lids on general waste bins containing food scraps must have either a lock or a clasp to prevent access by wildlife - All waste storage areas must have adequate fire fighting equipment suitable for the type of waste stored in that particular area (type and location to be assessed by a competent person) - Suitably sized spill kits and spill containment systems relevant to the activities within the site must be available in the vicinity of the waste storage areas - maintenance of spill kits must be kept up to date, ensuring that no equipment is missing from the kit. - All site personnel are trained in waste management as, how to minimise wastes, recognise which types of materials are recyclable, waste segregation, spill response, their obligations to use recycling facilities provided on site and the impacts of poor waste management. - Waste management requirements must be included in site induction and toolbox training activities - Safety data sheets for wastes, where available, Must be kept on file at the administration office for all wastes that have the potential to cause harm - Regular waste management inspections (documented) . - Waste collected by suitably licenced operators **- Waste tracking - All wastes (general and regulated) transported offsite must have a "Waste Transportation Form" or similar (Note - this will need to be collected from the waste removal contractor).**	Site Supervisor	3	Major	U	Unlikely	M	Medium	
63																				
64	43	**Heritage items**	General Earthworks & Prep works for access rds, Lay-Down Areas, Site Sheds, Car Parks, construction area etc Tree Cutting and Vegatation Removal Access Road & Internal Road Construction (incl. drainage) Construction of site offices Excavate, place, electrical (and other) services when installing site sheds / offices	Inadequate consultation with traditional owners/indigenous community prior to commencing operations	Complaints, delays and Loss of reputation	3	Major	VU	Very Unlikely	3	Medium	**ABOVE THE LINE CONTROLS** - Heritage assessment completed prior to commencing construction **BELOW THE LINE CONTROLS** - Project induction to include a process for managing the identification of suspected or actual heritage items - If heritage or sustpected heritage item is identified - work in area is to cease and area cordoned off - local Nyngan community team notified by the Project Manager	Site Supervisor	3	Major	VU	Very Unlikely	3	Medium	
65	44	**Community Complaints**	All stages of the project	Operations & Construction	Community complaints and Loss of reputation	4	Major	L	Likely	4	Major	**ABOVE THE LINE CONTROLS** - Regulated work periods - eg: 7:00am to 6:00pm Monday to Friday **BELOW THE LINE CONTROLS** - Complaints handling process established for the project and communicated to workers as part of the induction - Ongoing toolbox talks to reinforce procedures for responding to approaches from members of the public - Engineers and Supervisors to provide information to suppliers etc in relation to the restrictions on site deliveries	Site Supervisor	4	Major	L	Likely	M	Meduim	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2						Risk Rating							Responsible Person First Solar	Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation		Severity		Likelihood		Rating		Comments
66	45	**Oil, Fuel, Chemical Spills**	All stages of the project	Discharge of fuel onto surface Discharge of oil onto surface Discharge of Hazardous Chemicals/Substances onto surface Discharges to surface water or ground water Discharges of internal collection/treatment systems	Soil/Surface contamination Harmful fumes Potential fines Loss of reputation	4	Major	U	Unlikely	4	Medium	**ABOVE THE LINE CONTROLS** - Bunded fuel storage areas - Bunded oil storage areas - Self contained secondary storage tanks - Self bunded chemical storage cabinets - Portable bunds/trays - Mobile Plant acceptance process to ensure plant is fit for purpose and well maintained on arrival to the project **BELOW THE LINE CONTROLS** - Routine mobile plant maintenance in accordance with OEM requirements - Proactive weekly inspections (i.e. site health and safety inspections) prompt checks to ensure plant is being maintained in accordance to OEM requirements - Proactive Quarterly inspections of all mobile plant on site. Compliant plant issued with a new plant acceptance sticker for the new Quarter - Emergency Response plan to include site specific response protocol for oil, fuel or chamical spills - Spill kits placed in areas liquids are stored or accessed - Identified workers to receive training and instruction in the use of spill kits - Induction to include spill response requirements - Establish and maintain a drill of emergency response / evacuation exercises as per SMP 17 - Emergency Preparedness and Response. If possible, schedule a mock scenario (for hydraulic oil spill) to coincide with the earthworks phase of the project	Site Supervisor	4	Major	U	Unlikely	M	Medium	
67	46	**Land Contamination** (Note: also addressed under Spills, hazardous substances and chemicals, refuelling)	All stages of the project	Previous site and/or landowner activities	Long term illness from exposure; delays due to remediation works, cost	4	Major	L	Likely	H	High	**ABOVE THE LINE CONTROLS** - Site survey to be conducted prior to construction commencing **BELOW THE LINE CONTROLS** - Any suspected land contamination (e.g. asbestos in soil) discovered during construction must be immediately reported to the Construction Manager and HSE Manager - If construction works uncover an area of unknown, suspected contamination is found within the approved construction area, all work within a defined area of the contamination must cease to enable an inspection to enable an assessment of contamination levels. - Secure area, briefing staff/erecting signage directing all staff to keep out of the area. - Detailed site investigation will be undertaken. - Works in the affected area must not recommence without the written approval of the Construction Manager and HSE Manager. - Any excavated contaminated material must be kept separate from other soil in a location approved by the Environmental Advisor to prevent cross-contamination and covered to prevent migration of contaminants. - Contaminated soil must not be removed from the site without the appropriate approvals including all those applicable to waste transport and disposal. - If material has been confirmed of containing asbestos, an Asbestos Management and Remediation Plan needs to be developed by an Occupational Hygienist to aid in the management of the contamination. Management strategies may include: defer management and restrict access to area; Regular removal/clean up of ACF's by an AS1 Contractor; Containment either by (i) capping in situ or (ii) surface clean-up and capping; Removal of the likely contaminated fill layers from the site and disposal off-site to an approved landfill by a licenses asbestos removalist. - Once the area has been cleaned of asbestos and confirmed by the Occupational Hygienist a Clearance Certificate can be issued and normal works can resume.	Site Supervisor National HSE Manager Environmental Manager	4	Major	U	Unlikely	M	Medium	
68	47	**Noxious weed management**	All stages of the project	Tracking seeds or soil onto site	Reduce effectiveness of groundcover (dust control); Act as source of seeds of these plants)	3	Major	4	Likely	H	High	**ABOVE THE LINE CONTROLS** - Weed and seed inspections have been conducted throughout construction stage - In operations stage vehicles will not be allowed to enter site unless they are visibly clean and free of soil and vegetable matter - Monthly environmental inspections include checking for the presence of noxious weeds and this provides the trigger for undertaking thier removal **BELOW THE LINE CONTROLS** - Inductions inform all personnel on site (or visiting site) what the weed preventions and controls are	Site Supervisor	2	Moderate	4	Likely	M	Medium	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2						Risk Rating								Residual Risk Rating						
3	Number	Risk	Project Phase	Cause	Effect/ Impact	Consequ-ence		Likelihood		Rating		Risk Mitigation	Responsible Person First Solar	Severity		Likelihood		Rating		Comments
69	48	**Vegetation Growth in Arrays**	Operations	Nutrients and moisture under arrays favouring growth	Covering panels; Contributing to fuel loads	3	Moderate	4	Likely	H	High	**ABOVE THE LINE CONTROLS** - Control weeds growth as required eg chemical or slashing - explore use of grazing **BELOW THE LINE CONTROLS** - Monitoring growth during monthly environmental inspections	Site Supervisor	2	Minor	3	Moderate	M	Medium	
70	50	**Herbicide use on site**	Operations and construction	To control weed growth	Drift could kill revegetation growth; Drift into maintenance work areas (exposing workers)	4	High	3	Moderate	H	High	**ABOVE THE LINE CONTROLS** - Only spray at wind speeds less than 15 km/hr - restrict spraying to spot spraying where weeds are problematic and away from workers **BELOW THE LINE CONTROLS** - use a ChemCert certified sprayer only - Induscttions describe the hazards from chemicalsl used on site	Site Supervisor	3	Moderate	2	Unlikely	M	Medium	
71	51	**Dust and soil (mud) migrating/tracking offsite**	Operations and construction	Loss of groundcover Vehicle speeds too high Ground disturbance dutring hot dry windy weather Vehicles tracking mud onto Barrier Hwy when leaving site	Off site pollution; Disturbance to neighbours; Impeded vision of drivers on Barrier Hwy; Mud creates unsafe conditions (on Hwy)	4	High	3	Moderate	H	High	**ABOVE THE LINE CONROLS** - Maintain effective level of groundcover under arrays - Use water to suppress dust as required - Use dust suppressants as required for longer term dust control - Stop or reduce work until dust is mitigated - Minimise vehicles tracking off dedicated access roads and leaving site after heavy rains **BELOW THE LINE CONTROLS** - Induction of all personnel working on site covering how to minimise dust generation in their work areas and to not track mud off site onto Barrier Hwy	Site Supervisor	3	Moderate	2	Unlikely	M	Medium	
72	52	**Fauna entrapment by or within security fence**	Operational and construction	Fauna entering property while gate is open (during day) Fauna ingress under fence Avifauna striking fence	Fauna death	4	Major	3	Likely	H	High	**ABOVE THE LINE CONTROLS** - Gates kept closed - Don't chase fauna once trapped but allow them to escape safely on own terms - when required called fauna hanlder from WIRES to visit site and remove animals - Bird strike deterrents in place **BELOW THE LINE CONTROLS** - Provide inductions that address fauna interactions - regular monitoring to ensure fauna are not trapped (Fence monitoring and monthly environmental monitoring) - Monitor the fence perimeter for ingress points	Site Supervisor	3	Moderate	2	Likely	M	Medium	

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
2	Number	Risk	Project Phase	Cause	Effect/ Impact	Risk Rating						Risk Mitigation	Responsible Person First Solar	Residual Risk Rating						Comments
3							Consequ-ence		Likelihood		Rating				Severity		Likelihood		Rating	
73	**53**	**Explosion**	Operations	Failure in transformers in PCSs Explosion of stored chemicals	Injury or death Asset damage Spillage onto groudn and emissions to air Loss of fluids	5	Catastrop hic	1	Very Unlikely	H	High	**ABOVE THE LINE CONTROLS** - Transformers are enclosed in PCSs - Minimise storage of chemicals and fuels on site - Plant acceptance process to ensure any new or replacement plant is fit for purpose and well maintained on arrival to the project **BELOW THE LINE CONTROLS** - Routine mobile plant maintenance in accordance with OEM requirements - Monthly safety inspections to assess condition of transformers and any signs of leaks - Proactive monthly safety inspections (i.e. site health and safety inspections) prompt checks to ensure plant is being maintained in accordance to OEM requirements - Emergency Response plan to include site specific response protocol for oil, fuel or chemical spills - Spill kits placed in areas liquids are stored or accessed - Identified workers to receive training and instruction in the use of spill kits - Induction to include spill response requirements - Establish and maintain a drill of emergency response / evacuation exercises as per SMP 17 - Emergency Preparedness and Response. If possible, schedule a mock scenario (for transformer oil spill)	Site Supervisor	4	High	1	Very Unlikely	M	Medium	Medium

Appendix K – Daily Safety Plan

Location:	**Shift:**
Name/Title of person conducting Briefing:	**Date/Time:**
The objective of a good Safety briefing is to communicate an understanding of scope, hazards, and mitigation to enable the safe completion of work throughout the day. This document is intended to be a guide for discuss of general work place hazards and safety topics at the beginning of the day. This does not replace the JHA or Pre-Job Brief for each job.	
Initial each box upon completion of the section discussed. Mark N/A in the comment box if this section is not applicable to this job. REMEMBER TO MAKE THIS BRIEFING AN INTERACTIVE EVENT!	
1. Review safety message, lessons learned, or section from Safety Manual	
Comments:	
2. Review Plant Status	
Comments:	
3. Review Planned Work for the Day	
Comments:	
4. Review Site Hazards or Conditions (i.e., temperature outside, crane work, overview of the major jobs going on throughout the day, spiders and snakes, chemical deliveries, etc.)	
Comments:	
5. Discuss Error-Likely Situations. Think of what could go wrong throughout the day? What are some precautions that can be taken to prevent error?	
Comments:	
6. Ask whether or not personnel have any conditions that might impact their performance? (i.e., sick, fatigued, taking medication, outside work injury, …)	
Comments:	
7. Ask if anyone has questions, concerns, input for the day's work?	
Comments:	

Other things to consider:

- Overview of jobs to be performed throughout the day.
- Procedural requirements associated with work activities.
- Special tools or equipment required for work activities.
- Communication or coordination with other work groups.
- Housekeeping and clean-up provisions.
- Emergency response provisions for work activities.

Reminder: A specific JHA and Pre-Job Brief are required prior to each job performed throughout the day.

Print Name	Signature

Appendix L – Job Hazard Analysis (JHA) Template

Job Title:	JSEA No:	o New o Revised	Date:
Description of Work:	Developed By:		
Site Location:			
Supervisor:	Reviewed By:	FS Approval:	

HIGH RISK ACTIVITY:			
☐ Do I need an SDS? Attach if required.	☐ Is there work at heights?	☐ Is a hot work permit required?	☐ LOTO required?
☐ Entering Excavation? (>1.2m Deep)	☐ Entering a confined space?	☐ Removing floor or handrails?	☐ Lifting permit required?
☐ Excavation/Penetration Permit?	☐ Mobile Plant e.g. Forklift?		

EMERGENCY ACTION: UHF Channel 1 "Emergency, Emergency, Emergency" Refer step 1 - page 4.

JOB/HAZARD STOPPERS:

HAZARD PROMPTS - ***"Check☒". Identify the hazards applicable to your work activity and "Check ☒" the RISK potential personnel may be exposed to before safe guards are implemented: Now complete your JHA identifying risk levels & control measures for all hazards identified.***

Electrical	☐N/A ☐Low ☐Med ☐High	Vehicles	☐N/A ☐Low ☐Med ☐High	Pressure	☐N/A ☐Low ☐Med ☐High	Weather	☐N/A ☐Low ☐Med ☐High	Radiation (Hot Work / Sun)	☐N/A ☐Low ☐Med ☐High	Personnel working below	☐N/A ☐Low ☐Med ☐High	SMF or Asbestos	☐N/A ☐Low ☐Med ☐High
Chemical	☐N/A ☐Low ☐Med ☐High	Nics / Cuts / Scratches	☐N/A ☐Low ☐Med ☐High	Access	☐N/A ☐Low ☐Med ☐High	Bacteria	☐N/A ☐Low ☐Med ☐High	Rotating Equipment	☐N/A ☐Low ☐Med ☐High	Dehydration	☐N/A ☐Low ☐Med ☐High	Engulfment	☐N/A ☐Low ☐Med ☐High
Tools	☐N/A ☐Low ☐Med ☐High	Depth	☐N/A ☐Low ☐Med ☐High	Vibration	☐N/A ☐Low ☐Med ☐High	Dust	☐N/A ☐Low ☐Med ☐High	Moving Equipment	☐N/A ☐Low ☐Med ☐High	Hot / Cold Objects	☐N/A ☐Low ☐Med ☐High	Lighting	☐N/A ☐Low ☐Med ☐High
Gasses	☐N/A ☐Low ☐Med ☐High	Weight	☐N/A ☐Low ☐Med ☐High	Noise	☐N/A ☐Low ☐Med ☐High	Slip / Trip / Falls	☐N/A ☐Low ☐Med ☐High	Lifting Equipment	☐N/A ☐Low ☐Med ☐High	Overhead hazards	☐N/A ☐Low ☐Med ☐High	Manual Handling	☐N/A ☐Low ☐Med ☐High

JHA RISK SCORE CALCULATOR

Risk Score Calculator

		Consequence				
Loss Type		**1 LOW**	**2 MINOR**	**3 MODERATE**	**4 MAJOR**	**5 CRITICAL**
Injury and Disease		Low level sickness, soreness or injury felt by a person. Needs no medical treatment	Injuries, sickness, disability or impairment that can be fixed up. Only requires first aid treatment and monitoring	Injuries, sickness, disability that needs medical treatment – involves a workers compensation claim	Moderate disability or impairment (less than 30%), that can't be fixed to one or more people.	One person dying. Severe disability or impairmente. Health impact on more than 10 people
Environmental impacts		Minor short damage to a small area – biological and physical environment (eg. dust cloud, minor oil spill <20L)	Moderate affect on the environment, but not affecting the ecosystem.	Serious affect on the environment, some damage to an eco system (eg. maybe killing all of a species in a local area).	Very serious and big environmental impact. Major damage that cannot be fixed, serious impact on an eco system.	Nearly wiping out a valued species, habitat or eco system
Economic Impact		< $10,000	$10,000 to $100,000	$100,000 to $1,000,000	$1,000,000 to $5,000.00	> $5,000,000
Likelihood	**EH&S Risk**	**Risk Rating**				
5 Almost Certain	1 or more times per week	**11 (H)**	**16 (H)**	**20 (E)**	**24 (E)**	**25 (E)**
4 Likely	1 or more times per month	**7 (M)**	**12 (H)**	**17 (H)**	**22 (E)**	**23 (E)**
3 Possible	1 or more times per year	**4 (L)**	**8 (M)**	**13 (H)**	**18 (H)**	**21 (E)**
2 Unlikely	Occurs once every 1 to 10 years	**2 (L)**	**5 (L)**	**9 (M)**	**14 (H)**	**19 (E)**
1 Rare	Occurs once every 10 to 100 years	**1 (L)**	**3 (L)**	**6 (M)**	**10 (H)**	**15 (H)**

Residual Risk Controls

L = Low, No further action required

M = Medium, JHA Hazard controls to be reviewed by Supervisor

H = High, Do not proceed, hazard controls to be reviewed by Safety Advisor and Site Manager

E = Extreme, Do not proceed, hazard controls to be reviewed by Safety Manger and Divisional Manager

MANUAL HANDLING

Complete Sections
1) Identify
2) Prepare
3) Execute

1) Identify

Which manual handling hazards are present in this job (tick the box ✓)

- Whole body vibration ☐
- Pushing/Pulling ☐
- Upper body vibration ☐
- Repetitive or static one arm use ☐
- Lifting ☐
- Rough or uneven footing ☐
- Bending (Repetitive or static) ☐
- Climbing ☐
- Lifting/Holding above the shoulders ☐
- Carrying ☐

2) Prepare

For each hazard you've ticked, list one or two stretches that would assist in preparing you for each manual handling hazard

- Deltoids ☐
- Side stretch ☐
- Hamstrings ☐
- Calves ☐
- Psoas ☐
- Hamstring ☐
- Piriformis ☐
- Trunk ☐
- Wrist flexor and extensor ☐
- Shoulder Roll ☐
- Brachial ☐
- Pectorals ☐

3) Execute

Select which manual handling skills you'll need to employ.

- Strong Spine
  Use the gorilla or bullfrog technique when lifting ☐
- Regular short breaks
  Taking regular breaks avoids muscle creep ☐
- Select good working height
  Use stands and benches where possible ☐
- Strong Stance
  Take the load with the legs and away from your spine ☐
- Brace the abdominals
  Use your core muscles around the spine for protection ☐
- Team lift
  When moving large or heavy objects share the load ☐
- Look around / think ahead
  Know your next step is safe before committing your weight or taking that load ☐

#	MAJOR STEPS OF JOB / TASKS (Sequence of Events)	HAZARD IDENTIFIED IN PART A	Risk Level (Prior to Controls)	CONTROL MEASURES TO MAKE JOB SAFER	Residual Risk Level	CONTROL TO BE ACTIONED BY:
First 6 line items are Hazards & Controls identified for all Nyngan Solar Project tasks in the field. (These have been determined as requirements from incidents and investigations throughout the life of the project and are not to be removed) Personnel are to enter Job steps from line item 7 onwards.						
1	In case of emergency	Inadequate emergency communications Emergency contact details unavailable Personal not knowing where muster point is located	M	Work Team member to contact Supervisor Supervisor first call channel 1 • Location of emergency • Type of emergency • Assistance required • Number of casualties • Ensure message is received Second call to direct supervisor Supervisor to contact Manager and First Solar HSE Manager to contact First Solar Management To raise an emergency - Emergency Channel is channel 1 Specific emergency plants must be recorded in the JHA. e.g CSE, restricted entry	L	All Personnel
2	Emergency evacuation	Inadequate response	H	Turn plant/combustion motors off, park in safe location Relocate to nearest Assembly Point for name check off and transport to Muster Point as per Site Induction	L	All Personnel
3	Work Conditions	Wind and flying objects	M	Tie down loose materials, Correct PPE, Work to conditions.	L	All Personnel

#	MAJOR STEPS OF JOB / TASKS (Sequence of Events)	HAZARD IDENTIFIED IN PART A	Risk Level (Prior to Controls)	CONTROL MEASURES TO MAKE JOB SAFER	Residual Risk Level	CONTROL TO BE ACTIONED BY:
4	Environmental Hazards	Spills Fauna in work area	M	Report to your supervisor immediately. Control, Contain and Cleanup spill. Report to your supervisor immediately. Where required, only trained fauna handler is to relocated fauna.	L	All Personnel
5	Apply to all tasks continued Use of barricades and signs	Poor/Non-compliant barricades and signs	M	• Control access to the area from all sides • Have signs attached to all sides • Have legible, fully completed information tags attached • Signs at visible height, not on the ground • Maintain the barricade when needed and remove when not required • Ensure barricades stable and safe distance from excavations	L	All Personnel
6	Working with and around Mobile Plant	Plant and personnel interface Inadequate spotting activities In-ground services	H	Correct signage and barricades in place Safe designated access ways in place and used Spotters and Operators to plan specific activity, communication method, safe location for spotter/s and number of spotters required. Review controls regularly Implement correct required barricading and Danger Signs, Hard barriers and signs for people plant interface risks Competent approved Operators, Trained spotters	L	All Personnel

#	MAJOR STEPS OF JOB / TASKS (Sequence of Events)	HAZARD IDENTIFIED IN PART A	Risk Level (Prior to Controls)	CONTROL MEASURES TO MAKE JOB SAFER	Residual Risk Level	CONTROL TO BE ACTIONED BY:

EMERGENCY RESPONSE CONTACTS FOR NYNGAN SOLAR PLANT	EMERGENCY RESPONSE CONTACTS OTHER LOCATIONS
VHF Radio: Turn Radio to Channel 1, press press-to-talk button, say “Emergency, Emergency, Emergency”, wait for a response	

OCCUPATIONAL HEALTH SAFETY or ENVIRONMENTAL LEGISLATION:	CODES or STANDARDS APPLICABLE TO THE WORKS:
NSW Work Health and Safety Act 2011 **NSW Work Health and Safety Regulations 2011**	

APPROVALS – By signing below, I acknowledge that I have contributed to the development of this JHA and have reviewed the Hazid Worksheet and Work Method Statement (as applicable) to ensure the necessary hazards and controls are included:

TEAM MEMBER	NAME	SIGNATURE	DATE	TEAM MEMBER	NAME	SIGNATURE	DATE
JHA Team Leader				JHA Team Member			
JHA Team Member				JHA Team Member			
JHA Team Member				JHA Team Member			
JHA Team Member				JHA Team Member			

By signing below, I acknowledge that the controls documented in this JHA are adequate and that I am accountable for ensuring that the controls are implemented and followed:							
WORK TEAM SUPERVISOR				**ON SITE LINE MANAGER (OR DELEGATE)**			
Record of Changes in Supervisory Position / Responsibility							
WORK TEAM SUPERVISOR				**ON SITE LINE MANAGER (OR DELEGATE)**			

PART E: JHA AMENDMENTS / REVIEWS (Reviewed at least Weekly)											
TYPE OF AMENDMENT OR REVIEW (√)TICK						**REVIEW FINDINGS AND AMENDED REFERENCE**	**DATE**	**WORK TEAM SUPERVISOR (NAME) (RESPONSIBLE TO CAPTURE LESSONS LEARNED)**	**WORK TEAM SUPERVISOR (SIGNATURE)**	**ON SITE LINE MANAGER (OR DELEGATE) (NAME)**	**ON SITE LINE MANAGER (OR DELEGATE) (SIGNATURE)**
Key Change		New Hazard		Review							
Key Change		New Hazard		Review							
Key Change		New Hazard		Review							
Key Change		New Hazard		Review							

The 5 S.T.E.P.S. of Safety

➢ **S**top; ➢ **T**hink; ➢ **E**valuate; ➢ **P**roceed with caution; ➢ **S**upervisor: **If there is a problem raise it with your supervisor**

JHA SIGN ON SHEET					JHA Ref#_____
By signing below, I acknowledge that I have reviewed this JHA, understand the hazards identified and the potential for harm and will ensure that the controls will be implemented and followed:					
NAME	**SIGN**	**Date**	**NAME**	**SIGN**	**Date**

Appendix M - Pre Job Briefing and Work Authorisation

PART 1 – REQUESTOR	Site:		
	Requestor:	Phone:	Date:
	Requested **START** Date:	Requested **END** Date:	WO#:
	Job/Task Description:		
PART 2 – O&M	OSHA requires a pre-job brief to cover the following topics; hazards associated with the job, work procedures, special precautions, energy source control, personal protective equipment, and job changes that require an additional briefing.		
	Pre-Job Brief Conference – perform the following:		
	1. Define and discuss the job scope. (be specific, another briefing must be completed if scope changes during work)		
	2. Define and discuss individual job responsibilities and expectations regarding those responsibilities.		
	3. Discuss energy control measures (Clearances, Switching Orders, LOTO).		
	4. Discuss Job Hazard Analysis (JHA).		
	5. Discuss PPE and EHS Manual requirements for the job.		
	6. Discuss conditions that would require additional job-briefings or stopping the job.		
	7. Identify important Contact or Emergency numbers, ensure this information is available at work site.		
	8. Invite questions or input from work team members.		
	9. Ask aloud "What have we missed, what can go wrong with this job and how will we respond if it does?"		
PART 3 – REQUESTOR	The undersigned affirm that they have received the pre-job briefing, understand the scope of work and have had all questions and concerns addressed.		

O&M Work Authorization	
START Date: Time:	**END** Date: Time:
Approval _____ Date: _____ Time _____ (O&M Representative)	
Work Authorization Closure	
Approval _____ Date: _____ Time _____ (O&M Representative)	
Post-Job Review: What went right? What can be improved?	

Appendix N – Form D01 Monthly Environmental Inspection

Form – D01: Monthly Inspection Checklist

To be completed monthly during O&M phase of operations as part of meeting the requirements of Consent Condition SSD-5355 No. C4 Operational Environmental Management Plan and the relevant revised mitigation measures from the Submissions Report (relevant to O&M).

Note this form cross-references other Forms that may be required to be completed and/should be referred to as part of this Monthly Inspection.

Site: Nyngan

Week Ending:

Date:

Time:

FS Inspector/s:

Subcontractor or Owner Representative (if present):

1 Environmental Management Activities:

Insert photographs and notes here on activities this month

2 Environmental Compliance (SSD-5355)

Aspect	Conforms (Y/N)	Risk (H/M/L)	*Comment/s*
A10 Worker Environmental Awareness and Compliance (WEAC) training completed **(Forms-S01, S01 or equivalent register)**			
A11 Environmental incidents reported **(FS Event Notification and Investigation Report** and **Form-Q01)**			
A12 Complaints reported (provide any details here)			
A11 Safe Work Method Statement/Job Hazard Analysis reviewed for environmental controls			
REMM 24, B30 Artefacts/historical relics reported			
C16 Corrective actions from monthly inspections completed			

Form – D01: Monthly Inspection Checklist

To be completed monthly during O&M phase of operations as part of meeting the requirements of Consent Condition SSD-5355 No. C4 Operational Environmental Management Plan and the relevant revised mitigation measures from the Submissions Report (relevant to O&M).

Note this form cross-references other Forms that may be required to be completed and/should be referred to as part of this Monthly Inspection.

Aspect	Conforms (Y/N)	Risk (H/M/L)	*Comment/s*
Bushfire Risk			
REMM 58 Bushfire management plan in operation and effective			
B3 Hot works away from possible fuel load			
B3 Access to and operational fire-fighting equipment			
B4 Consultation with Rural Fire Service e.g. local emergency response, must be formally conducted annually			
Dangerous Goods			
B5 Fuels, chemicals, DGs stored, handled as per standard (bunding 110%, signage, spill kit, labelling, PPE, containers, SDSs)			
B5 Hazardous Materials Register maintained with cover sheet and all SDSs, new chemicals risk assessed and registered			
Dust Generation			
B6 No visible site emissions of dust			
Water Quality Impact			
B7 Waterways free of pollution and works >40m from a watercourse			
Soil & Water			
B9 All temporary and permanent drains effective (i.e. not eroding, discharging to			

Form – D01: Monthly Inspection Checklist

To be completed monthly during O&M phase of operations as part of meeting the requirements of Consent Condition SSD-5355 No. C4 Operational Environmental Management Plan and the relevant revised mitigation measures from the Submissions Report (relevant to O&M).

Note this form cross-references other Forms that may be required to be completed and/should be referred to as part of this Monthly Inspection.

Aspect	Conforms (Y/N)	Risk (H/M/L)	*Comment/s*
stable areas)			
B9 Sediment traps functioning and maintained in a good state of repair			
B17 Temporary diversion drains and sediment controls established prior to heavy rain (if required)			
B9 Potable/Non-potable water tanks maintained			
Ensure sheet flow is not causing migration of any added/incorporated organic materials from soil			
Waste			
B11 Site is clear of debris, waste eg no litter distributed on or offsite			
B13 Waste disposal laydown area demarcated, waste segregated, bins securely covered, waste disposed of regularly, no visible stockpiling			
B13 Smoking only in designated places, no cigarette butts on ground			
B13 Any Liquid wastes (sewage) contained			
B13 Non-regulated and regulated waste register **(Form-U01)** used to record wastes removed			
B13 Contaminated soil and spill materials disposed of in designated contaminated waste bins **(Form-U01)**			

Form – D01: Monthly Inspection Checklist

To be completed monthly during O&M phase of operations as part of meeting the requirements of Consent Condition SSD-5355 No. C4 Operational Environmental Management Plan and the relevant revised mitigation measures from the Submissions Report (relevant to O&M).

Note this form cross-references other Forms that may be required to be completed and/should be referred to as part of this Monthly Inspection.

Flora & Fauna			
REMM 63, B15 Clearing of vegetation limited to the minimal extent practically required and maintenance of regrowth **(Form-H01,02)**			
B15 Site free from weed infestation and control activities recorded **(Form-I01)**			
REMM 16, B15 Fauna entrapment inspections completed **(Forms-F01, F02)** including under buildings and open trenches			
REMM 19 Hollows and nest boxes in Area 2 (Environmental Zone) inspected and maintained **(Form-F01)**			
B16 Demarcation of non-disturbed areas and “no-go zones” in particular Area 2			
B17 Fencing in good order.			
B17 Fauna collision/entanglement mitigation controls effective **(Form-F01)**			
REMM 21 & 23 Offset plantings monitored (by AGL)			
Visual Amenity			
REMM 37, B20 Landscape planting at receptor, roadways to screen views effective, maintained **(Forms G-01, G0-2)**			
Rehabilitation & Re-vegetation			
B21 Re-vegetation measures implemented progressively (within 6 months) and maintained as healthy **(Forms H-01, H-02)**			

Form – D01: Monthly Inspection Checklist

To be completed monthly during O&M phase of operations as part of meeting the requirements of Consent Condition SSD-5355 No. C4 Operational Environmental Management Plan and the relevant revised mitigation measures from the Submissions Report (relevant to O&M).

Note this form cross-references other Forms that may be required to be completed and/should be referred to as part of this Monthly Inspection.

Traffic & Transport			
C7 Site access and/or roadways free from mud/litter			
C3 Onsite plant maintained with vehicle pre-starts up-to-date and defects corrected			
C3 Vehicle movements only on access areas and access tracks no wider than 10m			
C3 Vehicles speeds are within specified area limits			
REMM 18 Space between arrays kept clear for weed control and vegetation maintenance			

3 Scorecard

Monthly Score	Y	N	Total	Status %
Total				

SSD-5355 Corrective Action Report:

Week	Date	Issue / Non-conformance	Risk	Action Required	Reference	Due Date	Person Responsible	Workflow Comment	Completion Date

Table Notes: Expected completion dates, as per SMP 24: Corrective Action Management. Responsibility as per CEMP, with agreed close out at monthly site coordination meeting.

Appendix O – Compliance Tracking Program Form & Management OEMP Review Form T01

COMPLIANCE TRACKING - Operations Stage - Nyngan Solar Plant

CONDITION TITLE	CONDITION DESCRIPTION	Compliant, Indeterminate, Non-Compliant	Description of issues, Compliance evidence, and Amelioration Strategy (if required)
PART A ADMINISTRATIVE CONDITIONS A1 Obligation to Minimise Harm to the Environment	Implement all measures to prevent and/or minimise any harm to the environment.		

A2 Terms of approval	Carry out the project in accordance with the application and conditions of approval.		
A3	The most recent document shall prevail to the extent of any inconsistency. Conditions of approval prevail in any inconsistency.		
A4	Comply with any requirement(s) of the Director-General arising from any documents submitted and b) the implementation of any actions therein		

A5 Limits of approval	Approval lapses with 5 years unless any works physically commenced.		
A6 Staging	Submit a staging report if selected for appropriate time. Submit updated staging report.		
A7 Structural Adequacy	New buildings and any alterations constructed as per BCA.		

A8 Decommissioning	Return the site to condition prior to the commencement of construction. All solar panels and above ground structures shall be removed from the site except where the, control room or overhead electricity lines are transferred to local electricity network operator.		
A9	Decommission solar plant is not used for a continuous period of 12 months. Keep annual records for electricity generation. Provide copies upon request. Dismantle solar panels and any infrastructure within 18 months from generation of electricity.		
A11	Provide written evidence that the lease agreements require that decommissioning occurs in accordance with this approval.		

A12 Compliance	Ensure that employees, sub/contractors aware of, and comply with conditions of this approval.		
A13	Be responsible for environmental impacts from actions of all persons that it invites onto the site, including sub/contractors.		
A14	In the event of a dispute either party may refer the matter to the Director-General for resolution.		

PART B ENVIRONMENTAL PERFORMANCE B1 Ancillary Facilities	Locate of Ancillary Facilities shall be located in appropriate locations listed in (a) -(k) Refer CEMP.		
B2	All Ancillary Facilities shall be rehabilitated.		
B3 Bushfire Risk	Design, construct and operate all project components to minimise ignition risks. Provide necessary emergency management to respond to a bush fire.		

B4	Regularly consult with the local RFS. Comply with reasonable request of the local RFS.		
B5 Dangerous Goods	Store and handle dangerous goods to most stringent legislative requirements.		
B6	Construct and operate the project that minimises dust generation and prevents visible emissions of dust from the site. Identify and implement measures such that emissions of visible dust cease.		

B7	Comply with s120 of the Protection of the Env. Operations Act 1997 which prohibits the pollution of waters.		
B8	Carry out works within 40m of a watercourse as per Guidelines (NOW, July 2012).		
B9 Construction Soil and Water Management	Minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters as per Landcom book.		

B10 Waterways	Design and construct waterway crossings in consultation with NOW and DPI (Fisheries) and consistent with DPI (Fisheries) guidelines Policy and Guidelines for Fish Friendly Waterway Crossings (2004) and Fish Passage Requirements for Waterway Crossings (2004).		
B11 Waste Management	Directly removed on site waste to 'lawful' waste management facility.		
B12	External waste will not be received except under licence.		

B13	All liquid and/or non-liquid waste generated shall be assessed as per Guidelines		
B14	External Utilities, services and other infrastructure affected shall be identified, consulted. Costs borne by Proponent.		
B15 Native Vegetation Impacts	Minimal clearing of all native vegetation. Extent included in the Flora & Fauna Management Plan, per C3(a).		

B16	Tree trunks/major branches from cleared trees used in rehab areas or native scrub. Include in Flora /Fauna Management Plan per C3(a).		
B17 Fauna Impacts	Design, construct and operate transmission line to minimise the risk of bird and bat strike into electricity wires.		
B18	Prepare an expert's management plan for raptor nesting and provide to Dept and OEH		

B19	Maintain a buffer of 500 metres the raptor nesting site unless otherwise agreed to by Director-General.		
B20 Landscaping Requirements	Submit a Visual Impact Verification Report at receptors and roadways. Identify all reasonable and feasible screening and landscape planting options in consultation with affected parties.		
B21	Implement measures in the Visual Impact Verification Report Within 18 months in by the Director-General (or as otherwise agreed to by the Director-General), the Proponent shall ensure that the measures identified in the Report are implemented at affected receptors and roadways as identified in the Report in consultation with relevant parties		

B22	Ensure that any permanent buildings and overhead transmission lines minimise visual intrusion.		
B23 Rehabilitation and Revegetation	Implement a revegetation and rehabilitation program.Measures implemented within six months at the relevant area. Monitor and maintain health until self sustaining.		
B24 Construction Noise	Construction activities associated with the project shall be undertaken during the standard construction hours except as otherwise provided under B25:		

B25	Construction works outside of the standard construction hours identified in condition B24 may be undertaken in defined circumstances.		
B26	Impulsive or tonal noise emission undertaken in defined hours.		
B27	Implement measures to minimise noise generation as per Noise Guideline (DECC, July 2009)		

B28 Operational Noise Criteria	Minimise noise emissions and vibration per Noise Policy (DECC, 2000) Vibration Guideline (DECC, 2006).		
B29 Operational Noise Design Standards – Overhead Transmission Line	Transmission line to minimise the generation of corona and aeolian noise at nearest receptors.		
B30 Road Dilapidation	Commission independent, Pre-construction Road and Road Dilapidation reports. Prepare subsequent reports to assess damage and reinstate roads.		

B31	Upgrade intersection of site access and the Barrier Highway.		
B32	Cease works immediately if aware of **Aboriginal** object(s). Inform parties of finds. Determine strategy and receive written authorisation from OEH.		
B33	Cease works immediately if aware of **historical** object(s). Inform parties of finds. Determine strategy and receive written authorisation from OEH.		

C1 ENVIRONMENTAL REPRESENTATIVE	Nominate Environment Representative(s) and ER to do defined items. the duration of construction, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall: do (a)-(g)		
C2 Construction Environmental Management Plan (CEMP)	Prepare and implement a Construction Environmental Management Plan (CEMP). Await written approval before commencing construction. Plan to include defined items: (a)-(p)		
C3	The Proponent shall prepare and implement the following plans: (a)Flora and Fauna Management (b) Ground Cover Management (c) Landscape (d) Construction Noise Management (e) Traffic Management (f) Aboriginal Heritage.		

C4 Operational Environmental Management Plan	Prepare and implement an Operation Environmental Management Plan per Guideline. in consultation with the specified Crown Lands Division.The Plan shall include but not necessarily be limited to items (a)-(j).		
C5 Biodiversity Offset Management Plan	Develop and submit a Biodiversity Offset Management plan in consultation with the OEH. Includes items (a)-(e)		
C6 Decommissioning Management Plan	Prepare in consultation with the relevant agencies and Crown Lands Division a Decommissioning Management Plan for the project per Guideline. To include items (a)-(e).		

C7 Decommissioning Road Dilapidation	Commission a qualified person to prepare (a) Decommissioning Road Report in consultation with the relevant road authority: (b) Prepare Road Dilapidation Report and reinstate roads.		
C8 Incident Reporting	Notify, prescribed parties of any environmental incident. Also notify of other incident type. Provide detailed and other requested reports.		
C9 Regular Reporting	Provide regular environmental reporting on website.		

C10 Community Information, Consultation and Involvement	Make all required approval documents, subject to confidentiality, available for public inspection on request.		
C11 Provision of Electronic Information	Establish, publish and maintain up-to-date information on website for items (a)-(e).		
C12 Community Information Plan	Prepare and implement a Community Information Plan which includes items (a)-(e).		

C13 Complaints Procedure	Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation) or as otherwise agreed by the Director-General: items (a)-(c)		
C14	Record details of all complaints in prescribed format. Make available upon request.		
C15	Provide initial response within 48 hours of a complaint being made. Recorded in accordance with condition C14. detailed response within two weeks.		

C16 Compliance Tracking Program	Develop and implement a Compliance Tracking Program as per conditions (a) - (f).		

FORM T01 – OEMP Auditing and Review

Date	Type		Completed By	Any Non-Compliances (yes/no)	List OEMP Sections	Actions
	Review	Audit				

Appendix P – Landscape Plan, Groundcover Monitoring (From H01), and Landscape Monitoring (Form G02) and Excavation Permit Documents

Scope of Works

First Solar - Nyngan Solar Plant Landscaping OEMP Sub-plan

Prepared by

First Solar (Australia) Pty Ltd

ABN: 66 141 686 946

September 28, 2015

Document Verification

Project Number: 14

Project File Name: Nyngan Solar Plant Landscaping Scope of Works

Revision Nº	Prepared By	Description	Date
A	Turlough Guerin	Final Draft	September 28, 2015

Document Acceptance

Action	Name	Position	Signed	Date
Approved by	Michael Law	Project Manager		
on behalf of	First Solar (Australia) Pty Ltd			

Table of Contents

Contents

1 Scope of Works

1.1 Background

First Solar (Australia) Pty Ltd (First Solar) has been engaged by AGL as the operations and maintenance contractor of the 102 Megawatt (MW) Solar Photovoltaic (PV) Solar Power Station at Nyngan, central west NSW.

The development has been approved as a State Significant Development under the approval instrument SSD-5355.

1.2 Purpose & Scope

The purpose of this document is to describe the works to ensure the project complies with the landscaping requirements that the planning consent conditions and mitigation measures require for the development of the Nyngan Solar Plant.

It provides the technical specification for undertaking all the works required to established the required on-site landscaping according to the revised plan for the site, "Nyngan Solar Farm Revegetation Plan" prepared by Local Land Services, NSW Government, Dubbo (June 2015).

It does not include the provision of a Visual Impact Assessment Report (Consent Conditions B18-19).

1.3 Specific Consent Conditions and Contractual Requirements

Consent Condition B20, Mitigation Measure 37 (screening vegetation/landscape planting is required), and the Consent Condition B21 (requirement for independent verification that rehabilitation is "healthy & self-sustaining" in latter part of this condition), are all specified in **Schedule 26** of **AGL- First Solar Head Contract** as the contractual responsibilities of AGL.

Management of the landscape plantings beyond the Construction Phase will become the responsibility of the project owner/operator (AGL). Any additional planting required outside the area identified in the Landscape Management Plan is also the responsibility of the project owner (AGL) and falls outside the mandate of First Solar.

The landscape planting to be undertaken would be restricted to a corridor on the southern boundary of the power station (including a cultural heritage garden as required through consultations with the local community – see section 1.4) complemented with two strategically located infill plantings, intended to screen infrastructure from viewpoints, on edge of the Barrier Highway.

1.4 Revision Landscape Plan

As required in Consent Condition C3, community consultation was conducted to seek input from interested community members. This resulted in a revised landscaping plan which was developed by Local Land Services in Dubbo (NSW Government), taking into account interested stakeholder concerns. As a result of the consultation, a later start date than anticipated is expected.

Further, one of the key requirements for the landscaping works is that the resulting planting areas should be suitable for the Grey Crowned Babbler to habitat in. Based on feedback from Dubbo OEH Ecologist (FSolar-ADVICE-000593, 29/6/2015) on the "Nyngan Solar Farm Revegetation Plan" (June 2015, Local Land Services, Dubbo), this proposed habitat has been confirmed as suitable.

The landscape planting in this proposal includes weed control, site preparation (scalping, ripping, pre-plant watering, mulch application), supply and planting of containerised plant materials, maintenance watering, install signage at Site 2 (Cultural Heritage Garden), weekly followup inspections (for 16 weeks), and replanting to re-establish 100% plant survival rates. It will also include technical oversight from an independent ecologist to monitor health of the established plants (as required in Consent Condition B21) and any impacts from the application of mulch to the plants.

1.5 Functional Requirements

First Solar's Environmental Lead has consulted extensively with AGL, Local Land Services (Dubbo) and Neill's Contracting to develop the functional scope of the proposed works to be implemented to enact this plan.

First Solar has sought quotes from an independent Contractor (Neill Contracting) to undertake the landscape planting, to deliver the intent of the plan which is to mitigate any potential visual amenity effects presented by the power station development, and providing habitat for the grey crowned babbler.

The landscape planting is expected to cover an area of approximately 5 ha (~25 m x 2000 m) with 3-5 rows containing a mix of native trees, shrubs and groundcover.

Within this area, there are four sites planned to be revegetated with local indigenous species. These sites include:

1. Screening/windbreak/biodiversity corridor. Covering the southern boundary this site focuses on creating a multipurpose corridor using local indigenous species. There will be a western and an eastern section (see original site plan Figure G01 in **Attachment 1**).

2. Cultural heritage plant area, focusing on re-establishing local indigenous species which have cultural significance. Species selected include locally occurring plants historically used such as bush tucker, medicinal, weapons and tools. This will be incorporated into the western length of plantings (in original

CEMP-G site plan layout) as a length of approximately 60 m long and width of 35 m. This area will be readily accessible from the O&M buildings.

3. & 4. Barrier Highway (in fill) planting sites. There will be two areas of 200 m each. Revegetation with local indigenous species. ***Access to undertake these works will need to be co-ordinated with the neighbouring landowner, Will Carter, by AGL.***

The planting densities and seeding rates for each of the four sites are provided in the appended plan (provided by LLS, Dubbo).

We also note that the mulch to be used will be from the shredding of used packaging pallets and cardboard on site which has been shown to be free of any chemicals of concern, or toxicity to plants (using OECD Method 208), and as determined by extensive chemical analysis (Report L131118, Leeder Analytical, 4/7/2015). A waste exemption has been submitted to EPA for re-using this mulch on site for the landscaping (and covering bare areas left as a result of construction phase). The EPA has advised verbally that they will likely require additional information in order to make their determination on the granting of a waste exemption which we understand is a favourable sign that the exemption will be granted.

1.6 Health, Safety and Environment (HSE) Requirements

All work will be carried out in accordance with NSW Workplace Health & Safety Act 2011, and its Regulations and relevant Codes of Practice.

The minimum First Solar HSE requirements that must be undertaken prior to the commencement of the work include:

- SWMS/JHA/JSA review and evaluation
- Project (Site) Induction and Familiarisation
- Plant (equipment) hygiene assessment

The project site has been identified with Bathurst Burr (*Xanthium spinosum)* and Hunter Burr (*Xanthium italicum*) and therefore plant hygiene, meaning clean i.e. mud/seed-free machinery), will only be allowed to enter to site.

Throughout the course of the project and contract, First Solar will undertake periodic reviews of the subcontractor's performance compliance with relevant WH&S provisions, including environmental compliance. If the subcontractor fails to comply with a verbal direction, the contractor will be issued with a stop work notice and Hazard Non-Compliance (HNC) Report by the person who is responsible for supervising the contractor.

1.7 Hazardous Chemical and Dangerous Goods

All contractors involved with project works are to ensure the following issues are complied with the *Code of Practice for the Safe Use and Storage of Chemicals (including Pesticides and Herbicides) in Agriculture 2006.* Specifically this will include:

a) SDS dated within the last five (5) years are to be given to First Solar as part of site specific Safety Plans/Work Method Statements and a copy kept with the product on site;

b) Risk assessments for each substance (and its uses) shall be carried out by First Solar prior to the hazardous substances being brought onto site,

c) ALL containers in which hazardous substances/dangerous goods are stored, or decanted into need to be appropriately labelled, (and disposed of appropriately),

d) Work Method Statements and JHAs include those hazardous substances/dangerous goods or processes representing significant risks to users,

e) Details of instruction, training and supervisory requirements for the use of the hazardous substances/dangerous goods, is to form part of site specific Safety Plans/Work Method Statements,

f) An emergency plan developed for any significant risks associated with any hazardous substances/dangerous goods,

g) A fire extinguisher provided to any area where a hazardous substances/dangerous goods shows a significant fire risk,

h) Personal protective equipment provided for use with the hazardous substances/dangerous goods in accordance with the SDS and Work Method Statements, and

i) Personnel trained in the hazards associated with the hazardous substances/dangerous goods and in the correct use and maintenance of personal protective equipment.

1.8 Drawings & Technical Specifications

The landscaping will be constructed in accordance with the requirements of this Scope of Works document, Technical Specifications and the drawings listed below:

Attachment - 1 – Landscape Planting Design from original CEMP (Appendix G). This provides the overview of where the plantings will occur (i.e. Sites 1-4).

Attachment 2 – Nyngan Solar Farm Revegetation Plan Published by Local Land Services, Dubbo (2015). This provides details of seedling layouts, in each of the four designated planting areas, species to be procured, earthworks required, and planting density. *This document supersedes the planting layout originally approved by DP&E in CEMP Appendix G.*

2 Materials

2.1 Herbicides

Only herbicides currently registered with Australian Pesticides and Veterinary Medicines Authority (APVMA) will be used. Dye marker (vegetable based) will also be required for herbicide application. Glyphosate has been applied at a rate of 1.5 L per ha across all the areas to be landscaped (5 ha) on 4 July 2015. Pesticides (insecticides) are not anticipated to be needed (and have not been costed) and will only be used where an infestation is evident and this would be requested as a variation. The costings do allow, however, for replacement of plants that do not survive (assuming a 70% survival rate).

2.2 Mulch

Mulch may be used in the landscaping ***depending on the approval given by NSW EPA to re-use the shredded packaging materials onsite***[1] (and has been costed in this proposal).

The mulch is a construction by-product (used packaging) which includes:

- Shredded cardboard available from the PV module packaging boxes
- Hardwood chips from PV module packaging pallets
- A combination of these materials mixed in approximately equal proportions

Where mulch is used, this will be added so as to provide 150 mm depth of material across the four planting sites, and along the Main Access Road (eastern road verge).

If approval is not given for the re-use of the mulch, then these costs will not be incurred.

2.3 Plant Materials

Trees (T), shrubs (S) and groundcover (G) species that are recommended are all native to the Nyngan area and are suited to the local environment.

The species are identified on pages 2-6 of the attached Plan developed by LLS, Dubbo.

[1] This is the subject of a separate submission to NSW EPA via the "Sustainability Advantage" Group of OEH with support of independent consultant/advisor, Advitech (Colin Barker).

All plant materials are being sourced from local nurseries. Where a specific plant is unavailable and cannot be obtained, a similar plant will be sourced (in consultation with AGL and Andrew Knop from LLS, Dubbo, and the Project Environmental Representative).

2.4 Tree Guards, Stakes & Ties

Tree guards will not be used due to the litter that they cause and the additional expense of installation as recommended by LLS, Dubbo.

2.5 Weed mat

Weed matting will not be used. Weed growth will be monitored throughout the maintenance period however it is expected that the weed spraying and scalping (as part of the bed preparation) will limit reseeding of weeds.

2.6 Fertiliser

Fertiliser will not be applied to the plants.

2.7 Watering

Newly planted tube stocks must be watered-in to reduce planting shock, to remove air pockets next to roots and to help establish good root to soil contact.

Costings for an initial pre-planting saturation watering, and weekly watering events after that (until April 2016) are provided in this proposal.

2.8 Signage

Signage will be procured once the final species are agreed upon.

An allowance for 24 signs and a general information board (1m x 2m) has been made in the budget.

3 Planting Operations

3.1 Timing

The site specific conditions will be taken in to consideration at the time of planting to ensure that the desired screening coverage is attained. Weather conditions should be favourable without excessive wind or sun. Planting will commence once the herbicide spraying is completed and soil preparation is finished. This is expected to be mid July 2015 at the earliest.

Anticipated key dates for the works are provided in the table below. A project Gantt chart, showing the estimated duration of tasks is provided in **Attachment 3**.

First Solar will endeavour to obtain the required plants (as per the LLS plan). In the event that certain plants are not available in the current season, such plants will be ordered for next season and will be sown at that later time. This will not impact upon the pricing in this proposal with the exception of one additional inspection by LLS ecologist (from Dubbo) would be required.

Activity	Anticipated Key dates
Agreement on final plant selection, plant procurement and transportation to site (for available plants)	**TBA**
Co-ordination of land access (with Will Carter) (for in-fill plantings)	TBA (prior to April 2014)
Spraying for weeds	*4 July 2015 (completed, effective)* *2nd spraying may be required in March/April 2016*
Soil Preparation (scalping, ripping, scarifying)	~1 April 2016
Setting out (for seedling placement)	~2 April 2016
Planting	**15 April 2016**[1]
Placement of signage	30 April 2016
First watering event	1 May 2016[2]
Maintenance – Watering, monitoring	Weekly for 16 weeks (post planting date - Last event in April 2017.

Table Notes:

1. This date will depend on approvals to undertake the works and securing of funds.
2. This will be linked to planting date.

3.2 Transport and Storage of Plants

All plants will be inspected upon arrival to ensure suitability. Rejected plants will be replaced. Allowance has been made for replacement of 30% the initially placed plants (due to dying during or after planting).

Care will be taken during transportation to prevent damage to plants. A temporary holding facility may be erected if temporary storage is required. An example of how this may be set up would be star pickets and shade cloth to protect from wind, sun and vermin.

Plants will be kept moist prior to and during planting to maintain the root system.

3.3 Setting Out

Plant beds will be located within the centre of the prepared spoon drains as per photographs on page 7 in the attached revised landscaping (revegetation) plan (LLS, Dubbo).

3.4 Weed Removal

Weed spraying with knockdown herbicide of the screening width has already occurred as a part of ground preparation. The total area sprayed was estimated at approximately 5 ha.

This area will likely require a second spraying prior to planting to ensure weed plants do not transpire valuable soil moisture from the soil profile (which will be required for the newly planted landscape plants).

After the final spraying, scalping of the soil surface (to 75 mm) will be conducted using a grader with ripper/scarifier attachments.

3.5 Grading

Grading of the landscaping area (5 ha) will be required after weed control.

This will be done so as to produce east-west rows of 3-5 spoon drains removing the top 75 mm of soil (i.e. the seed bank). This is described in Steps 2-4 in the attached revised landscaping (revegetation) plan (LLS, Dubbo).

3.6 Soil Cultivation

After weed spraying, and grading, beds will be prepared by furrowing the centre of each spoon drain using a grader. This will be done in two separate passes to avoid excessive clods (in the seed bed) as shown in the attached revised landscaping (revegetation) plan (LLS, Dubbo).

3.7 Planting

Trees and shrubs are to be spaced a minimum of approximately 3-6 m apart (depending on which Site 1-4). Groundcover seed to be hand spread or broadcasted to create clusters as shown in the layouts for each Site 1-4 in attached revised landscaping (revegetation) plan (LLS, Dubbo).

Holes will be excavated by hand tools or backhoe or similar suitable equipment. Soil conditioners may be placed in the holes with the plants, followed by backfilling with cultivated topsoil and fertilizer. The seedlings will be watered immediately prior to and after planting.

3.8 Disease and Insect Control

Plants may be sprayed with pesticide to control disease and insect infestation.

3.9 Maintenance

Maintenance of the planting will be conducted on a weekly basis after the plantings. Watering and plant health checks will be conducted during weekly inspections to ensure healthy growing conditions.

Key maintenance activities described in the Landscape Plan include:

- Regular checks of fences to ensure stock do not gain access.
- Rainfall and soil moisture levels will be monitored for the first six months. Frequency of watering may be varied during periods of adequate rainfall. Watering to be a applied at the following estimated rates;
  - 5 Litres of water per plant initially immediately after planting;
  - 5 Litres of water per plant at approximately weekly intervals (for a total of 16 events) thereafter (depending on weather conditions) after planting in April 2016. The frequency will be dependent on the rainfall and weather post-planting.

- Maintenance of all planting areas, including mulched beds and rows accesses, up to limit of clearing, free of grass and weed. Spot spraying of weeds with selective herbicides may be undertaken if weeds begin to overpower seedlings (although not expected with scalping).
- Checks for evidence of browsing by wildlife such as hares and wallabies.
- Unviable plants will be replaced as soon as practicable, but no later than April 2017.
- Pruning will be conducted if deemed necessary.

4 Staging Plan

Landscaping works will be conducted in two main stages.

Individual stages will comprise the following:

- Stage 1: Construction
    - Stage 1A – Spraying for weeds
    - Stage 1B – Agreement on final plant selection, plant procurement and transportation of plants to site
    - Stage 1C – Soil preparation (scalping, ripping, scarifying)
    - Stage 1D – Mulch placement
    - Stage 1E – Planting
- Stage 2: Maintenance

Refer also to attached Gantt Chart for time line of project (**Attachment 3**).

5 References

NSW DP&E, 2013, Nyngan Solar Plant State Significant Development Consent (SSD-5355).

ngh environmental, March 2013, Nyngan Environmental Impact Statement.

Fresh Landscape Design, October 2012, Nyngan Solar Plant Visual Impact Assessment.

First Solar, 2013, CEMP G - Landscape Management Plan.

NSW Agriculture, 2006, Code of Practice for the Safe Use and Storage of Chemicals (including Pesticides and Herbicides).

Local Land Services (Dubbo), 2015, Nyngan Solar Farm Revegetation Plan.

Attachment - 1 – Landscape Planting Design (from CEMP Subplan G) and Proposed Site 2 Cultural Heritage Garden (on amended site plan)

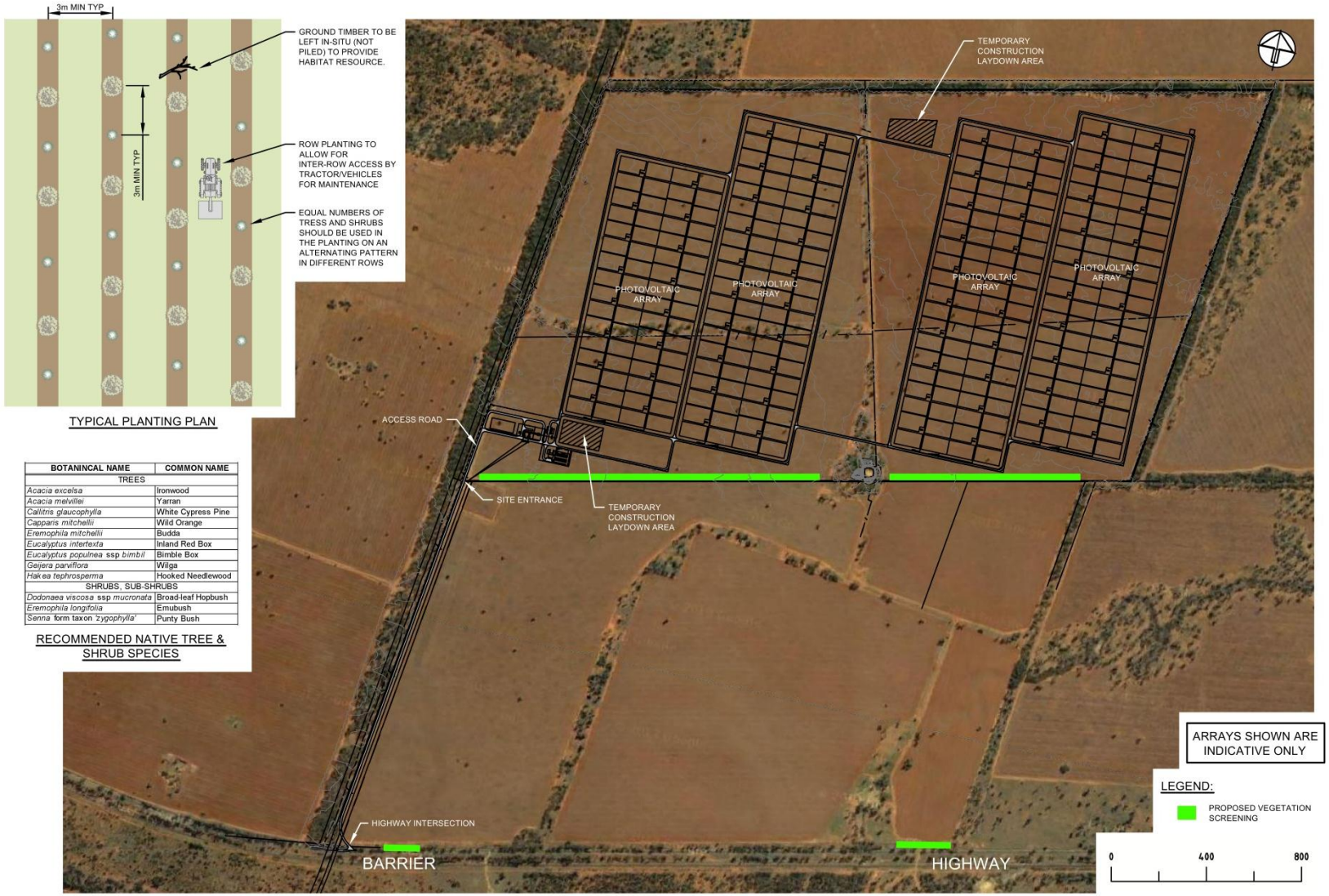
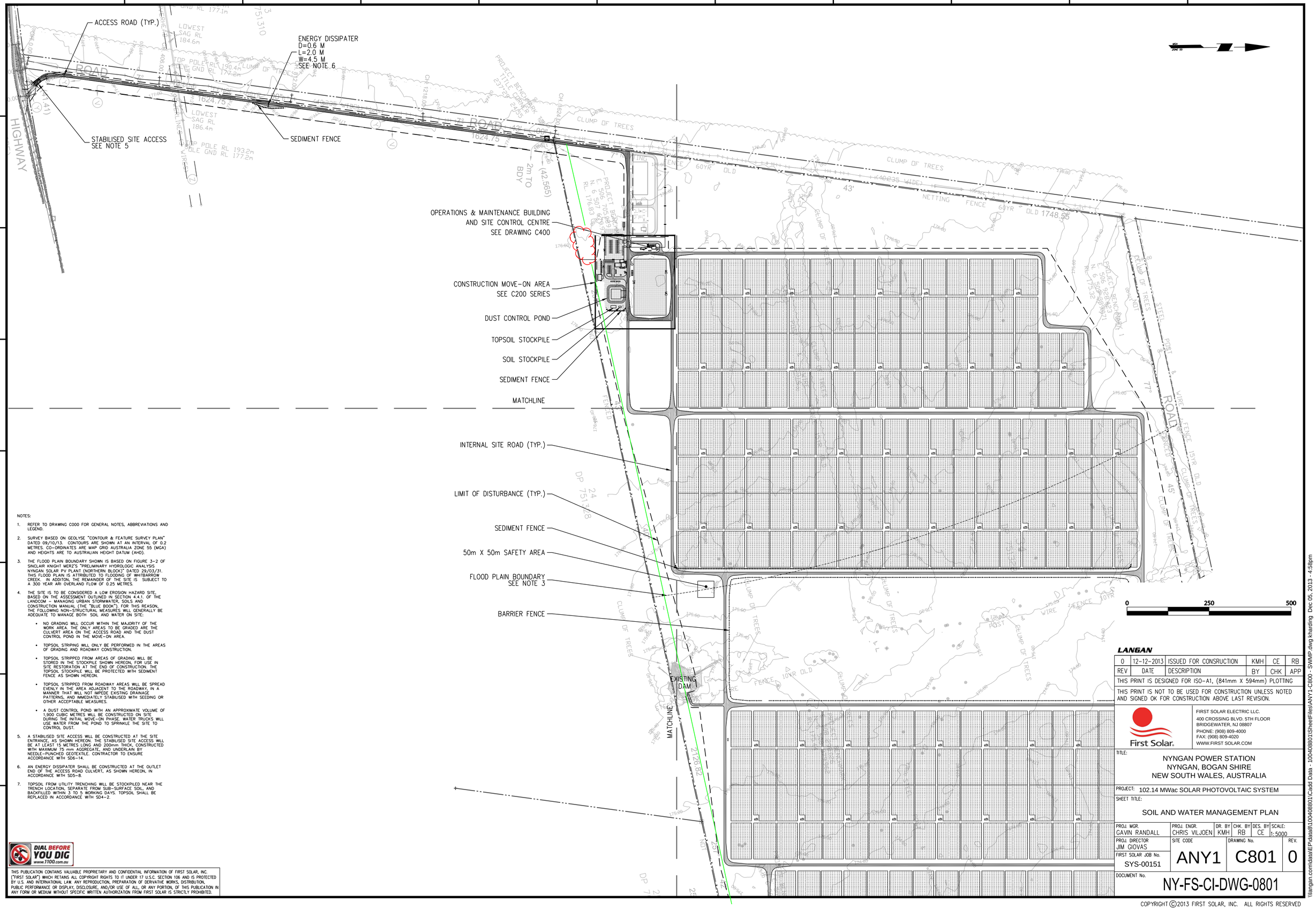


Figure-G01: Landscape plan



NOTES:

1. REFER TO DRAWING C000 FOR GENERAL NOTES, ABBREVIATIONS AND LEGEND.
2. SURVEY BASED ON GEOLYSE "CONTOUR & FEATURE SURVEY PLAN" DATED 09/10/13. CONTOURS ARE SHOWN AT AN INTERVAL OF 0.2 METRES. CO-ORDINATES ARE MAP GRID AUSTRALIA ZONE 55 (MGA) AND HEIGHTS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
3. THE FLOOD PLAIN BOUNDARY SHOWN IS BASED ON FIGURE 3-2 OF SINCLAIR KNIGHT MERZ'S "PRELIMINARY HYDROLOGIC ANALYSIS NYNGAN SOLAR PV PLANT (NORTHERN BLOCK)" DATED 29/03/31. THIS FLOOD PLAIN IS ATTRIBUTED TO FLOODING OF WHITBARROW CREEK. IN ADDITON, THE REMAINDER OF THE SITE IS SUBJECT TO A 300 YEAR ARI OVERLAND FLOW OF 0.25 METRES.
4. THE SITE IS TO BE CONSIDERED A LOW EROSION HAZARD SITE, BASED ON THE ASSESSMENT OUTLINED IN SECTION 4.4.1. OF THE LANDCOM – MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION MANUAL (THE "BLUE BOOK"). FOR THIS REASON, THE FOLLOWING NON-STRUCTURAL MEASURES WILL GENERALLY BE ADEQUATE TO MANAGE BOTH SOIL AND WATER ON SITE:
   - NO GRADING WILL OCCUR WITHIN THE MAJORITY OF THE WORK AREA. THE ONLY AREAS TO BE GRADED ARE THE CULVERT AREA ON THE ACCESS ROAD AND THE DUST CONTROL POND IN THE MOVE-ON AREA.
   - TOPSOIL STRIPING WILL ONLY BE PERFORMED IN THE AREAS OF GRADING AND ROADWAY CONSTRUCTION.
   - TOPSOIL STRIPPED FROM AREAS OF GRADING WILL BE STORED IN THE STOCKPILE SHOWN HEREON, FOR USE IN SITE RESTORATION AT THE END OF CONSTRUCTION. THE TOPSOIL STOCKPILE WILL BE PROTECTED WITH SEDIMENT FENCE AS SHOWN HEREON.
   - TOPSOIL STRIPPED FROM ROADWAY AREAS WILL BE SPREAD EVENLY IN THE AREA ADJACENT TO THE ROADWAY, IN A MANNER THAT WILL NOT IMPEDE EXISTING DRAINAGE PATTERNS, AND IMMEDIATELY STABILISED WITH SEEDING OR OTHER ACCEPTABLE MEASURES.
   - A DUST CONTROL POND WITH AN APPROXIMATE VOLUME OF 1,900 CUBIC METRES WILL BE CONSTRUCTED ON SITE DURING THE INITIAL MOVE-ON PHASE. WATER TRUCKS WILL USE WATER FROM THE POND TO SPRINKLE THE SITE TO CONTROL DUST.
5. A STABILISED SITE ACCESS WILL BE CONSTRUCTED AT THE SITE ENTRANCE, AS SHOWN HEREON. THE STABILISED SITE ACCESS WILL BE AT LEAST 15 METRES LONG AND 200mm THICK, CONSTRUCTED WITH MAXIMUM 75 mm AGGREGATE, AND UNDERLAIN BY NEEDLE-PUNCHED GEOTEXTILE. CONTRACTOR TO ENSURE ACCORDANCE WITH SD6-14.
6. AN ENERGY DISSIPATER SHALL BE CONSTRUCTED AT THE OUTLET END OF THE ACCESS ROAD CULVERT, AS SHOWN HEREON, IN ACCORDANCE WITH SD5-8.
7. TOPSOIL FROM UTILITY TRENCHING WILL BE STOCKPILED NEAR THE TRENCH LOCATION, SEPARATE FROM SUB-SURFACE SOIL, AND BACKFILLED WITHIN 3 TO 5 WORKING DAYS. TOPSOIL SHALL BE REPLACED IN ACCORDANCE WITH SD4-2.

DIAL BEFORE YOU DIG www.1100.com.au

LANGAN

REV	DATE	DESCRIPTION	BY	CHK	APP
0	12-12-2013	ISSUED FOR CONSRUCTION	KMH	CE	RB

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THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

First Solar.
FIRST SOLAR ELECTRIC LLC.
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TITLE:
NYNGAN POWER STATION
NYNGAN, BOGAN SHIRE
NEW SOUTH WALES, AUSTRALIA

PROJECT: 102.14 MWac SOLAR PHOTOVOLTAIC SYSTEM

SHEET TITLE:
SOIL AND WATER MANAGEMENT PLAN

PROJ. MGR.	PROJ. ENGR.	DR. BY	CHK. BY	DES. BY	SCALE:
GAVIN RANDALL	CHRIS VILJOEN	KMH	RB	CE	1:5000

PROJ. DIRECTOR	SITE CODE	DRAWING No.	REV.
JIM GIOVAS	ANY1	C801	0
FIRST SOLAR JOB No. SYS-00151			

DOCUMENT No. NY-FS-CI-DWG-0801

Attachment - 2 – Nyngan Solar Farm Revegetation Plan Published by Local Land Services, Dubbo (2015)

NSW GOVERNMENT | Local Land Services Central West

Nyngan Solar Farm Revegetation Plan

Published by the Local Land Services

Title

First published June 2015

ISBN

More information

Andrew Knop / Land Services / Central West Local Landservices, 36 Darling St Dubbo Ph. 02 6881 3409

www.lls.nsw.gov.au

Acknowledgments

Overview and scope

This document outlines the recommended strategy for the revegetation of the AGL Energy Limited, Nyngan Solar Farm, as indicated on the map below (map image supplied by AGL Energy Ltd).

The Nyngan Solar farm is located approximately 11km due west of the township of Nyngan NSW on the eastern edge of the Cobar Peneplain Biogeographic Region (IBRA). The principle vegetation found on the site is identified as Keith Formation: Semi-arid Woodlands (Shrubby subformation) [CW]; Keith Class: Western Peneplain Woodlands (David Keith 'Ocean shores to desert dunes: the native vegetation of NSW and the ACT'. Dominant canopy species identified include Bimble Box *Eucalyptus populnea*, Red Box *Eucalyptus intertexta*, Grey Box *Eucalyptus microcarpa* and White Cypress Pine *Callitris glaucophylla*.

Four sites are planned to be revegetated with local indigenous species. These sites include:

1. Screening/windbreak/biodiversity corridor. Covering the southern boundary this site focuses on creating a multipurpose corridor using local indigenous species.

2. Cultural heritage plant area, focusing on re-establishing local indigenous species which have cultural significance. Species selected include locally occurring plants historically used such as bush tucker, medicinal, weapons and tools.

3 & 4. Barrier Highway sites. Revegetation of disturbance sites with local indigenous species.

Topics covered by the document include:

1. Site design and species recommendations
2. Site preparation recommendations

3. Planting recommendation
4. Maintenance recommendations
5. Summary of actions

Site Design and Species Recommendation

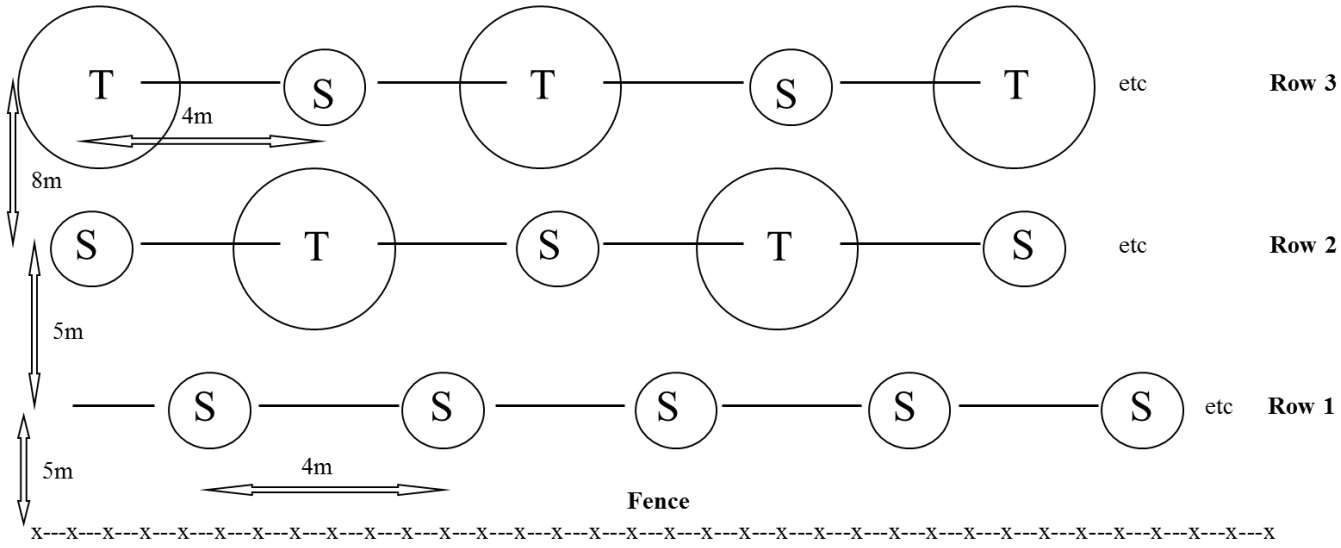
As described in the overview four sites will be revegetated with local indigenous vegetation as listed below. All species selected are locally occurring indigenous plant species. In should be noted due to the short timelines for this project some of the recommended species may not be available, in particular some bush tucker plants. Substitution within the same plant classification ie Tree – Shrub – Ground Cover is recommended once availability is known.

The planting areas are divided into three principle designs.

Site 1. Southern boundary windbreak/screening and biodiversity planting.

This planting aims to create a continuous foliage layer from ground level to mature canopy height (approximately 15m) producing an effective screen and windbreak. The use of sub canopy shrubs will also produce excellent habitat for small insectivorous birds and lizards. Any natural fallen timber from the site can be added to increase the habitat after planting has occurred.

Layout



T - Tree Species S - Shrub Species

Species and seedlings requirements Site 1

No. of Seedlings per km	*Genus*	*Species*	Common Name	Notes
50	*Eucalyptus*	*microcarpa*	**Grey Box (T)**	Indigenous overstorey
50	*Eucalyptus*	*populnea*	**Bimble Box (T)**	Indigenous overstorey
50	*Eucalyptus*	*intertexta*	**Red Box (T)**	Indigenous overstorey

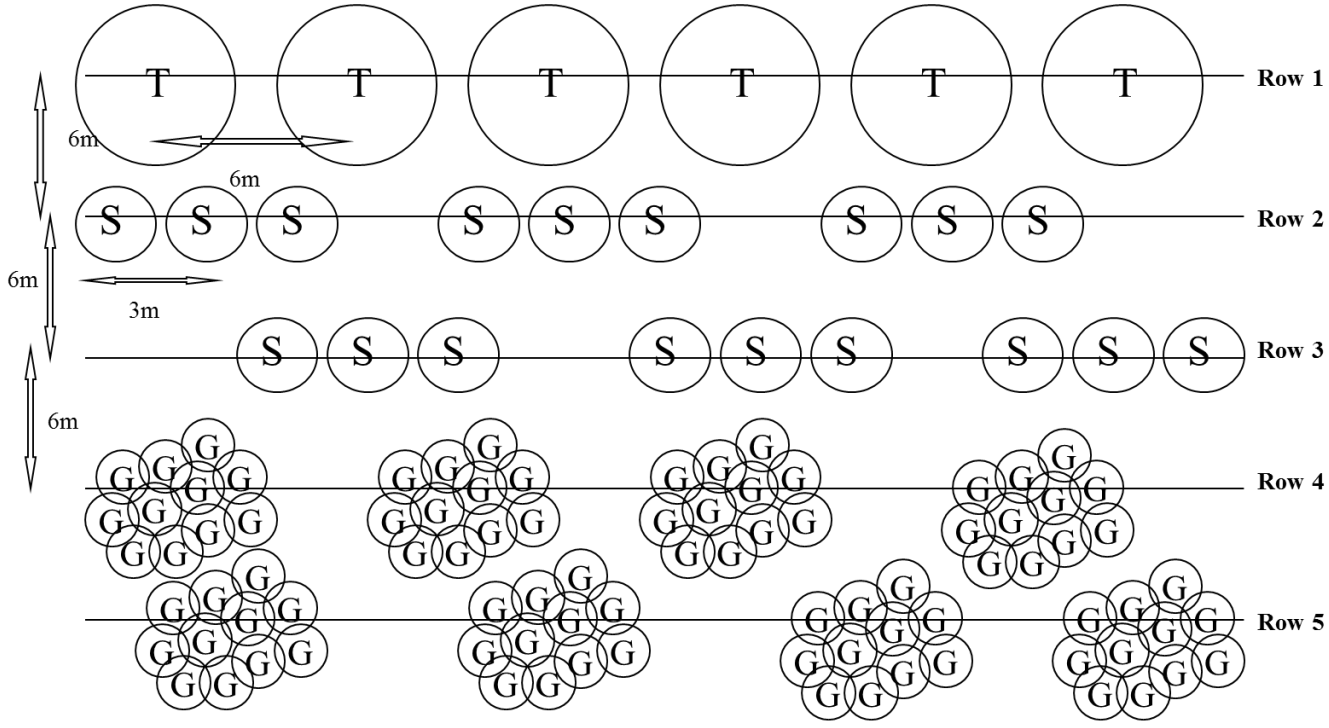
50	*Eucalyptus*	*viridis*	**Green Mallee (T)**	Cultural values - high quality eucalypt oil (cineole)
50	*Brachychiton*	*populneus*	**Kurrajong (T)**	Cultural values - bush tucker
100	*Acacia*	*victoriae*	**Elegant Wattle (S)**	Cultural values - bush tucker
100	*Acacia*	*hakeoides*	**Hakea Wattle (S)**	Cultural values - bush tucker
100	*Acacia*	*decora*	**Western Golden Wattle(S)**	Ecologically important plant - perennial legume
50	*Acacia*	*lineata*	**Streaked Wattle(S)**	Ecologically important plant - perennial legume
50	*Acacia*	*aneura*	**Mulga (S)**	Cultural values - multi use timber
100	*Acacia*	*deanei*	**Deans Wattle (S)**	Ecologically important plant - perennial legume
750	***TOTAL required per Km***			

Site 2. Cultural Heritage Bush Garden.

This planting aims to show case local indigenous plants with strong cultural significance for Aboriginals and early settlers, plants can be labelled with informative signage to facilitate community knowledge and appreciation. Selections include bush tucker and medicinal plants plus plants used for tools and weapons.

The tree species provide the backdrop with subsequent rows providing a cascade effect of lower growing plants. Each species is planted in specific clumps to assist with future signage.

Layout



T – Tree Species S - Shrub Species G – Ground Cover Species

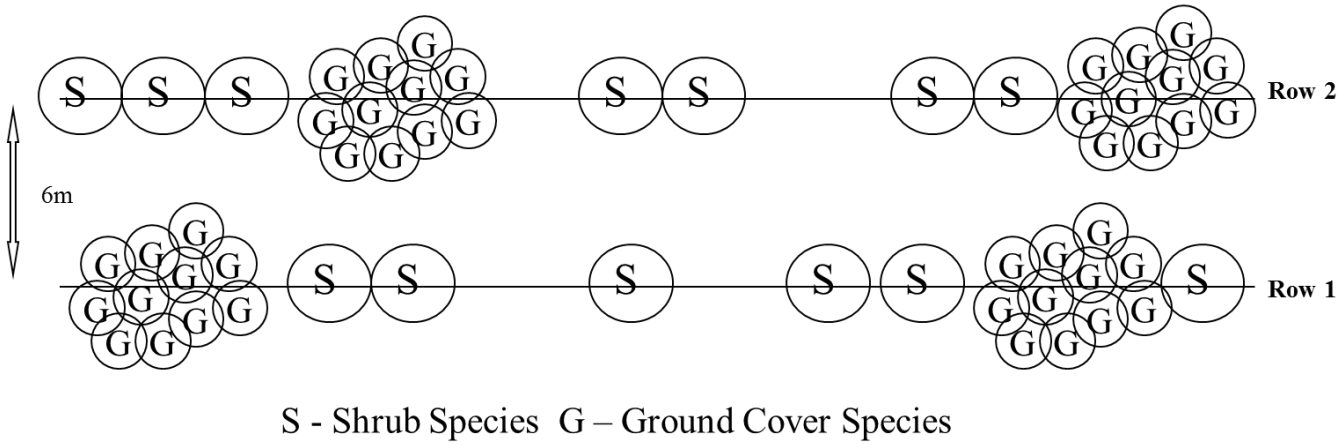
Species and seedlings requirements Site 2

No. of Seedlings	*Genus*	*Species*	Common Name	Notes
10	*Eucalyptus*	*viridis*	**Green Mallee (T)**	Cultural values - high quality eucalypt oil (cineole)
10	*Capparis*	*mitchellii*	**Wild Orange (S)**	Cultural values - bush tucker
10	*Santalum*	*acuminatum*	**Sweet Quandong (S)**	Cultural values - bush tucker
10	*Santalum*	*lanceolatum*	**Northern Sandlewood (S)**	Cultural values - multi use timber
10	*Exopcarpos*	*aphyllus*	**Leafless Cherry (S)**	Cultural values - bush tucker
10	*Exocarpos*	*cupressiformis*	**Cherry Ballart(S)**	Cultural values - bush tucker
10	*Brachychiton*	*populneus*	**Kurrajong (T)**	Cultural values - bush tucker
10	*Acacia*	*victoriae*	**Elegant Wattle (S)**	Cultural values - bush tucker
10	*Acacia*	*hakeoides*	**Hakea Wattle (S)**	Cultural values - bush tucker
10	*Acacia*	*aneura*	**Mulga (S)**	Cultural values - multi use timber
10	*Acacia*	*doratoxylon*	**Currawang (T)**	Cultural values - weapons - spears
10	*Acacia*	*excelsa*	**Ironwood (T)**	Cultural values - weapons - spears/boomerangs
10	*Acacia*	*homalophylla*	**Yarran (T)**	Cultural values - weapons - spears
10	*Pandorea*	*pandorana*	**Wonga Vine (S)**	Cultural values - weapons - spears
20	*Lomandra*	*multiflora*	**Many Flowered Mat-rush (G)**	Cultural values - bush tucker
20	*Lomandra*	*longifolia*	**Spiny-headed Mat-rush (G)**	Cultural values - bush tucker
20	*Dianella*	*revoluta*	**Spreading Flax-lily (G)**	Cultural values - bush tucker
20	*Dianella*	*laevis*	**Smooth Flax-lily (G)**	Cultural values - bush tucker
20	*Enchylaena*	*tomentosa*	**Ruby Saltbush (G)**	Cultural values - bush tucker
20	*Rhagodia*	*spinescens*	**Thorny Saltbush (G)**	Cultural values - bush tucker
20	*Stypandra*	*glauca*	**Nodding Bluelily (G)**	Cultural values - bush tucker
20	*Themeda*	*australis*	**Kangaroo Grass (G)**	Ecologically important plant - rangeland pasture
20	*Themeda*	*avenacea*	**Talloat Grass (G)**	Ecologically important plant - rangeland pasture
20	*Cymbopogon*	*refractus*	**Barbed Wire Grass (G)**	Ecologically important plant - rangeland pasture
340	***TOTAL required***			

Site 3. Barrier Highway planting.

This planting aims to rehabilitate areas disturbed during the construction phase. Focus of rehabilitation will be re-establishment of indigenous understorey plants including shrubs and ground covers. Seedlings are randomly spaced along the rows with ground cover plants clustered in small groups to facilitate cross pollination, creating seed increase areas.

Layout



Species and seedlings requirements Site 3 & 4

No. of Seedlings per 100m	*Genus*	*Species*	Common Name	Notes
10	*Acacia*	*victoriae*	**Elegant Wattle (S)**	Cultural values - bush tucker
10	*Acacia*	*hakeoides*	**Hakea Wattle (S)**	Cultural values - bush tucker
10	*Acacia*	*decora*	**Western Golden Wattle(S)**	Ecologically important plant - perennial legume
10	*Acacia*	*lineata*	**Streaked Wattle(S)**	Ecologically important plant - perennial legume
10	*Acacia*	*deanei*	**Deans Wattle (S)**	Ecologically important plant - perennial legume
10	*Lomandra*	*multiflora*	**Many Flowered Mat-rush (G)**	Cultural values - bush tucker
10	*Lomandra*	*longifolia*	**Spiny-headed Mat-rush (G)**	Cultural values - bush tucker
10	*Dianella*	*revoluta*	**Spreading Flax-lily (G)**	Cultural values - bush tucker
10	*Dianella*	*laevis*	**Smooth Flax-lily (G)**	Cultural values - bush tucker
10	*Enchylaena*	*tomentosa*	**Ruby Saltbush (G)**	Cultural values - bush tucker
10	*Rhagodia*	*spinescens*	**Thorny Saltbush (G)**	Cultural values - bush tucker
10	*Stypandra*	*glauca*	**Nodding Bluelily (G)**	Cultural values - bush tucker
20	*Themeda*	*australis*	**Kangaroo Grass (G)**	Ecologically important plant -

				rangeland pasture
20	*Cymbopogon*	*refractus*	**Barbed Wire Grass (G)**	Ecologically important plant - rangeland pasture
160	***TOTAL required per 100m***			

Site Preparation

Planting in semi-arid environments places high levels of stress on seedlings or seed. Typically natural regeneration events occur intermittently. In the eastern rangelands around Nyngan approximately four years out of ten may produce the conditions conducive to woody vegetation regeneration. Often these events follow dry periods which stress competitive ground covers leading to the mass regeneration of woody plants of low forage value often seen in these landscapes. To counter the difficulties likely to be experienced by revegetation projects in this region the following steps are recommended:

1. **Weed control** – suppression of all potential competition. The immediate planting sites should be kept weed free for as long as possible before planting (18 months is desirable). This bare soil policy builds soil moisture in the fallow and depletes the soil seed bank, enabling seedlings to access nutrients and moisture without competition.

2. **Soil preparation – scalping and contouring** (see implementation steps below). Given the revegetation works are scheduled to occur with short preparation timelines, scalping and contouring preparation is recommended. This method removes a large quantity of the residual seed soil bank resulting in instant long term weed suppression in the immediate planting zone. It also produces a water harvest zone whereby rainfall around the plants is channelled directly to the plants root, effectively magnifying its effectiveness. Unfortunately this preparation method does not produce a fallow reserve of moisture so care needs to taken to ensure plants survive until the first decent rainfall event.

Scalping and water harvesting implementation guide.

Step 1: Spray planting rows with a knockdown herbicide (Glyphosate) a minimum of 6 meters wide to loosen existing plants hold on the soil.

Step2: Using a grader scalp approximately 3 inches or 75mm of soil to create a shallow spoon drain or furrow which harvests rainfall from the surrounding area to the centre. Windrow soil away from the planting zone.

Planting zone at base of furrow, this is cultirvated at Step 3

Step 3: Cultivate the planting zone at the bottom of the spoon drain in two passes. The first pass should be at ½ implement depth to avoid creating large peds.

Step 4: Final pass at full depth (minimum 25cm) breaks up soil peds, producing a deep, friable planting bed. Note the scarifying bar is only approximately ½ meter wide. Avoid unnecessarily wide cultivation as it will reduce the effectiveness of the water harvesting benefit.

The ideal implement for deep soil cultivation, 3 tine scarifier with deep ripper.

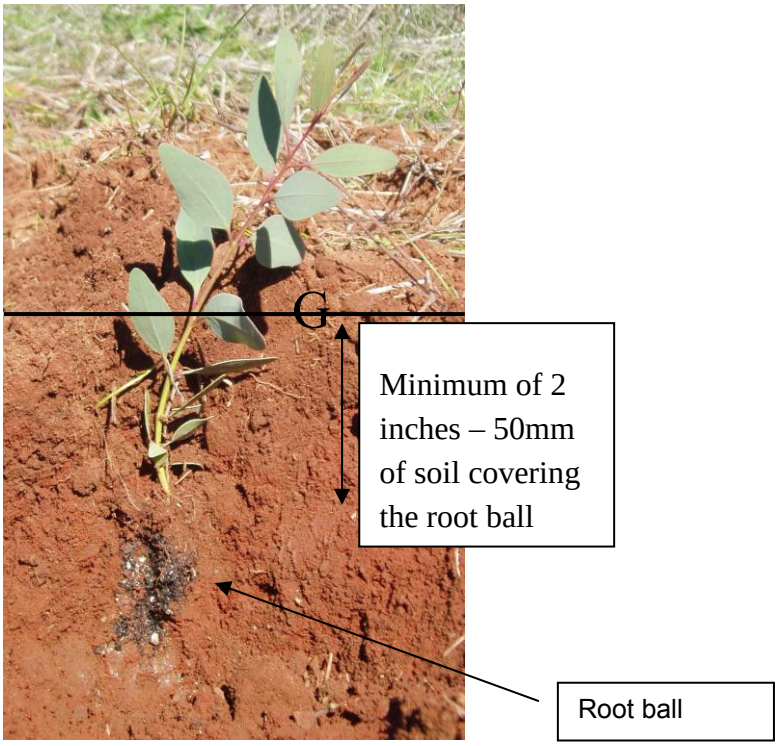
Planting Recommendation

In principle any method which successfully positions seedlings or seed in close contact with the soil can be used to get plants in the ground. Soil cultivation, such as the preparations covered above, helps ensure the seed and seedlings have a deep bed of friable soil which facilitates plant establishment and improves growth rates, it also greatly assists in the speed and efficiency of planting.

Pottiputki, Hamilton Tree Planters and planting spades are all effective planting tools when used properly in well prepared soil.

IMPORTANT TIPS: No matter what method used, when planting seedlings make sure you:

1. **Plant into a moist soil profile**. Soil which is dry will remove moisture from the root ball and discourage the root system from spreading into the soil.
2. **Soak the plants well, just before planting**. This will make removing the seedlings from their containers easier and will hydrate the root ball before it goes in the ground, giving it the best possible start.
3. **Plant the root ball deep into the soil**, preferably with 2 or more inches (5cm) of soil over the top of the ball (see below). This insulates the root ball from the sun and wind and gives the seedling access to moisture deep in the soil profile. Having leaf and stem under the soil will not harm the plant, just ensure the majority of the plants leaves are out and able to photosynthesise.



Note the excellent root ball to soil contact, allowing the newly planted roots immediate access to the soil. Good soil preparation assist in achieving this, soil which is cloddy and full of air pockets makes it difficult for the roots to break out from the ball. Having leaf and stem under the soil will not harm the plant, just ensure the majority of the plants leaves are out and able to photosynthesise.

Maintenance Recommendation

Post planting care should focus on watering in the seedlings until a major rainfall event (> 25mm) is received. Aim to supply 10 litres of water for each plant every few weeks until rainfall. Tree guards are not recommended due the litter they cause and the additional work and expense of installation.

Weed growth should be inspected early spring with competitive weeds such as pattersons curse, thistles etc being manually removed by chipping. Herbicide spraying post planting is not recommended due to high risk of spray drift.

Summary of Actions

1. Spray planting zones with knockdown herbicide (Glyphosate) a minimum of 6 metres wide on each row.
2. Order seedlings, some plants will be difficult to obtain and may need to be substituted.
3. Organise site preparation, recommend sourcing a grader with scarifying bar similar to implement pictured above.
4. Organise planting events, planting in winter is recommended due to lower evaporation and transpiration rates.
5. Organise follow up watering – ASAP after planting events.
6. Organise weed monitoring and appropriate follow up maintenance (early to mid spring).

More information

Andrew Knop

Senior Land Services Officer

36 Darling St

Dubbo NSW 2830

Phone: 6881 3409

Andrew.knop@lls.nsw.gov.au

Office of Environment & Heritage

NSW GOVERNMENT

Your reference:
Our reference: DOC15/237818
Contact: David Geering 6883 5335
Date: 26 June 2015

Turlough Guerin
Environmental Lead
First Solar (Australia) Pty Ltd.
Locked Bag 1837
St Leonards NSW 2065

Dear Turlough

RE: Nyngan Solar Farm Revegetation Plan

The Nyngan Solar Farm Revegetation Plan provides an outline of the methodologies used for revegetation of four strip plantings. These comprise a screen/windbreak, a cultural heritage plant area and the revegetation of disturbed sites along the Barrier Highway. The major deficiency of the plan is a lack of management targets and a monitoring plan.

Successful management plans include tailored, quantitative performance measures and targets, completion criteria as well as monitoring and trigger points for corrective action which adhere to the SMART principles (specific, measureable, achievable, realistic, timely).

Completion and performance criteria must be measureable and expressed in a manner that assists in the evaluation of progress toward the strategic goals that define the completion criteria. Completion and performance criteria should be expressed as specific numerical targets or as a percentage of the baseline or targeted condition. The completion criteria could be expressed, for example, as "*survival of 90% of planted trees and shrubs*" or "*a density of xx trees per hectare and xx shrubs per hectare*".

Underpinning this is the need for a monitoring program. Given the simplicity of the revegetation program this could be as basic as measuring survival of plants.

In response to the specific question as to whether this work would be suitable for Grey-crowned Babblers (Consent Condition B18-20 and C2), OEH suggests that, given the species composition of the plantings and the addition of course woody debris, that Grey-crowned Babblers are likely to utilise the plantings once they become established.

Should you require further information regarding issues that are the responsibility of the OEH please contact David Geering, Conservation Planning Officer on (02) 6883 5335 or david.geering@environment.nsw.gov.au.

Yours sincerely,

DAVID GEERING
A/Senior Team Leader Planning
North West Region

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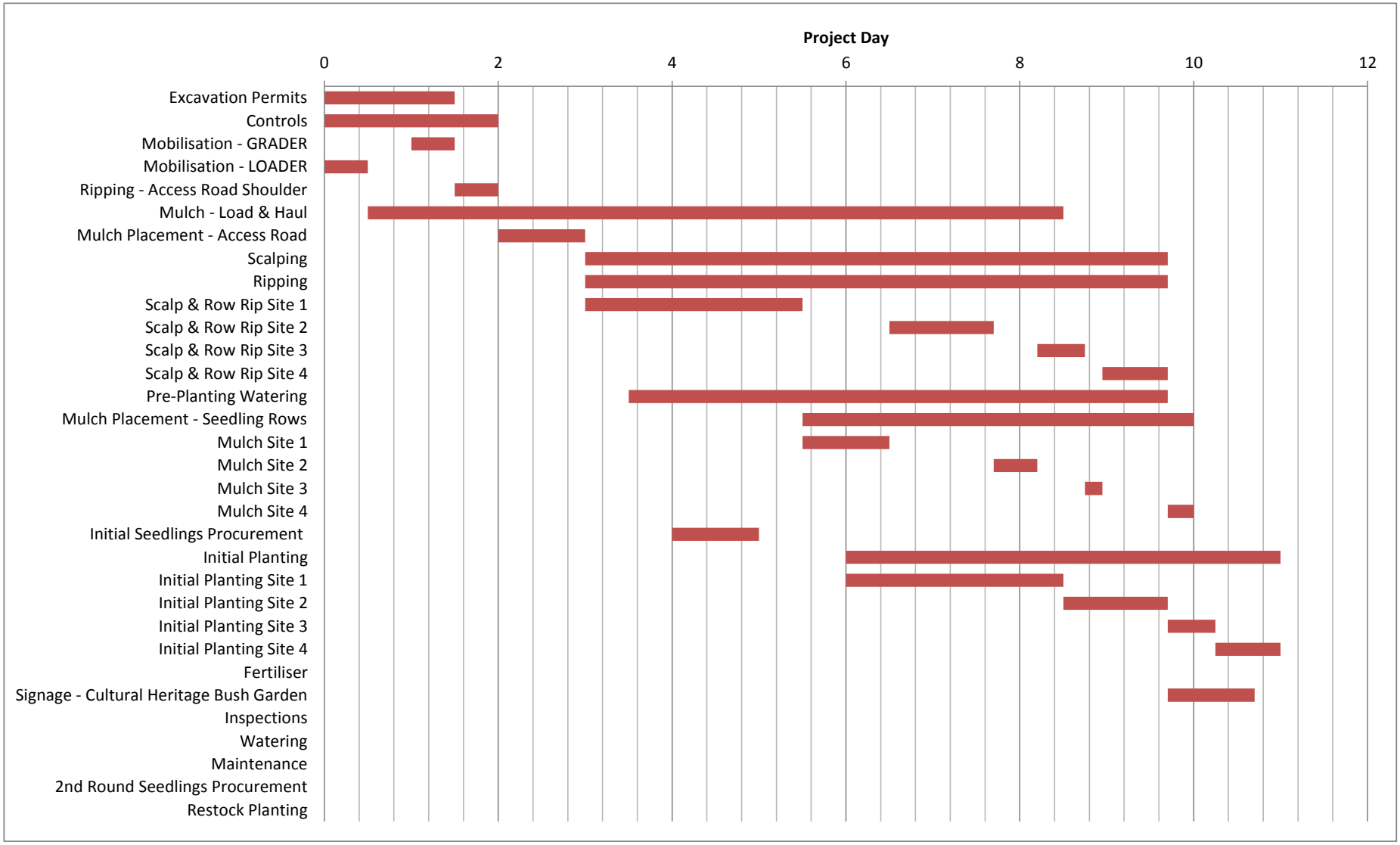
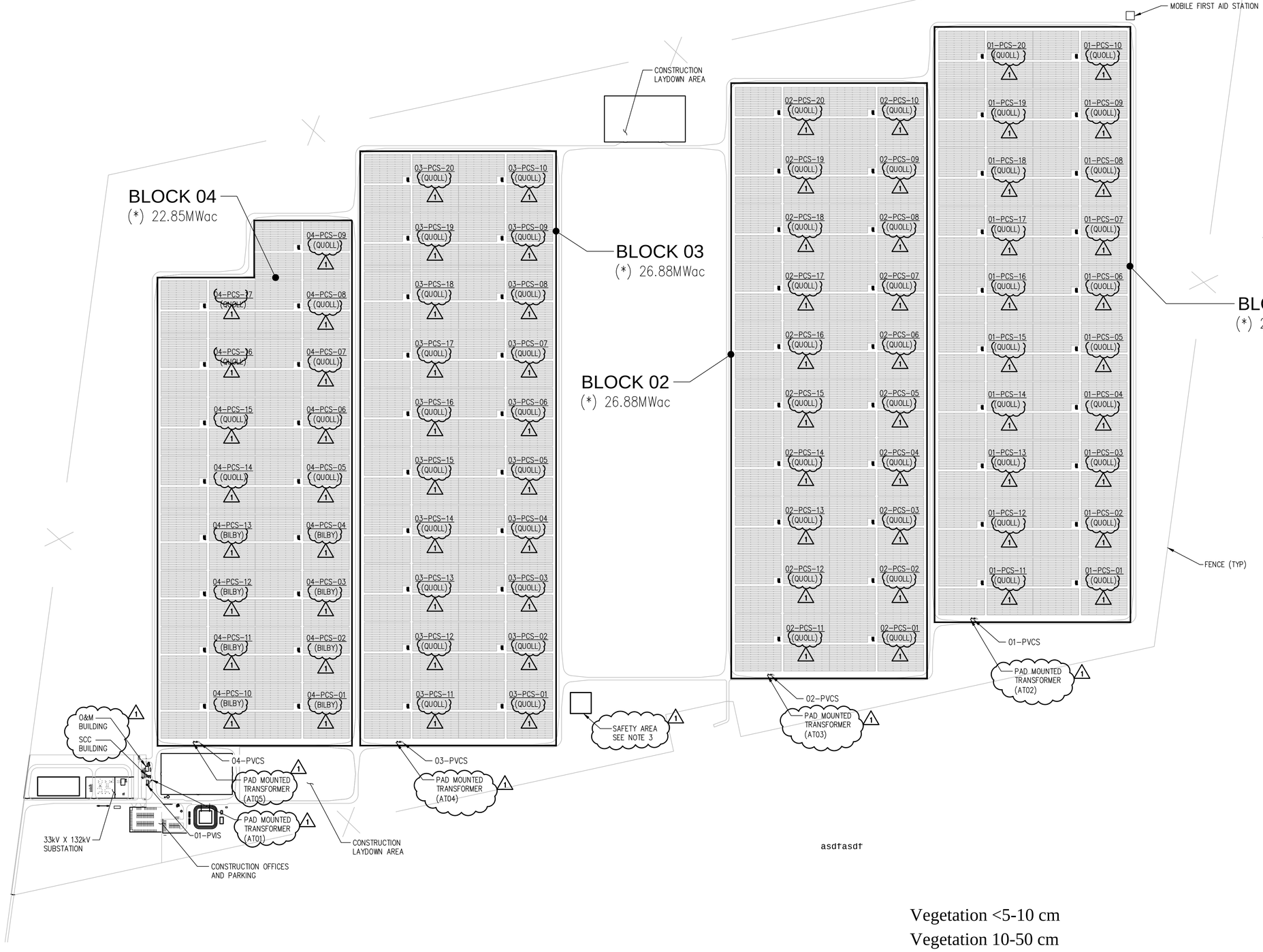
Attachment - 3 – Staged Timeline


Project Day
0
2
4
6
8
10
12
Excavation Permits
Controls
Mobilisation - GRADER
Mobilisation - LOADER
Ripping - Access Road Shoulder
Mulch - Load & Haul
Mulch Placement - Access Road
Scalping
Ripping
Scalp & Row Rip Site 1
Scalp & Row Rip Site 2
Scalp & Row Rip Site 3
Scalp & Row Rip Site 4
Pre-Planting Watering
Mulch Placement - Seedling Rows
Mulch Site 1
Mulch Site 2
Mulch Site 3
Mulch Site 4
Initial Seedlings Procurement
Initial Planting
Initial Planting Site 1
Initial Planting Site 2
Initial Planting Site 3
Initial Planting Site 4
Fertiliser
Signage - Cultural Heritage Bush Garden
Inspections
Watering
Maintenance
2nd Round Seedlings Procurement
Restock Planting

FORM H01 – Groundcover Monitoring Record

Date	Area	Seed Mix Applied	Photo Reference

REFERENCE DRAWINGS	
DWG. NO.	TITLE
E001	ELECTRICAL GENERAL NOTES
E002	ELECTRICAL ABBREVIATIONS AND SYMBOLS LEGEND



OVERALL SITE ARRAY PLAN

SCALE: 1:5000

NOTES:

1. THIS DRAWING REPRESENTS THE OVERALL SITE. SEE INDIVIDUAL BLOCK DRAWINGS FOR ADDITIONAL DETAILS AND REFERENCES.

(*) WATTAGE SHOWN REPRESENTS THE DESIGN BASIS WATTAGE FOR EACH ARRAY/BLOCK. THE ACTUAL FIELD INSTALLATION OF MODULE WATTAGE (I.E. BIN CLASS) CAN VARY BASED ON MODULE SHIPMENT SCHEDULE FROM THE FS FACTORY AND SAFE HARBOR REQUIREMENTS. THE MODULE WATTAGE/BIN CLASS INSTALLATION IN THE FIELD FOR EACH ARRAY/BLOCK WILL BE CONTROLLED AND DOCUMENTED BY FS CONSTRUCTION AND PERFORMANCE ENGINEERING TO ENSURE COMPLIANCE WITH THE DESIGN BASIS LIMITS AND ENERGY PREDICTION.

2. FOR BLOCK LEVEL DETAIL PLAN DRAWINGS, REFER TO E200 SERIES DRAWINGS.

1 3. HELECOPTER LANDING AREA.

LEGEND:

BLOCK BOUNDARIES

GRAPHIC SCALES

50m 0 100m 200m 300m

SCALE: 1:5000

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
1	03-06-2014	RE-ISSUED FOR CONSTRUCTION	GRP	MN	DM
0	12-12-2013	ISSUED FOR CONSTRUCTION	JR	MN	DM

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AGL

DEVELOPER:
AGL PV SOLAR DEVELOPMENTS PTY LIMITED

TITLE:
NYNGAN POWER STATION
NYNGAN, BOGAN SHIRE
NEW SOUTH WALES, AUSTRALIA

PROJECT: 102.14 MWac SOLAR PHOTOVOLTAIC SYSTEM

SHEET TITLE:
ELECTRICAL
OVERALL SITE ARRAY PLAN

PROJ. MGR.	PROJ. ENGR.	DR. BY	CHK. BY	DES. BY	SCALE:
GAVIN RANDALL	PETER GREEN	JR	DP	JR	1:5000

PROJ. DIRECTOR	SITE CODE	DRAWING No.	REV.
JIM GIOVAS	ANY1	E003	1
FIRST SOLAR JOB No. SYS-00151			

DOCUMENT No.
NY-FS-EL-DWG-0003

V:\Engineering\Applications Engineering\Projects\2013\SYS-00151 - Nyngan Power Station\Drawings\Active Construction Drawings\03 E\ANY1-E003.dwg FS1106862 Jun 03, 2014 - 2:50pm

APP - HCP: 04A Permit to Excavate

PART A: PERMIT DETAILS: (completed by Permit Acceptor and Permit Issuer)							
Project Name:		**Project No:**					
JHA Reference No:		**Permit to Work No:**					
Work Location:							
Start Date:	/ /	**Start Time:**	:	**Finish Date:**	/ /	**Finish Time:**	:

Services Identified on Plans	☐	Electric Power Cables	☐	Gas Pipes	☐	Fuel / Oil (tanks, pipes)	☐	Communication Cables / Fibre Optic / Telstra	☐	Air / Water Pipes	☐ Drains & Sewerage Pipes
Details of others services identified:											
Details of safe approach distance (s) / Exclusion Zones	**Mechanical Plant**		**m**	**Mechanical Hand Tools**		**m**	**Hand Tools**		**m**		

Define Scope of Works to be undertaken (As per the referenced JHA & attached Plans / drawings / sketches):

PART B: WORK CONTROLS : Tick as required ✓ (completed by Permit Issuer)

	Yes	N/A		Yes	N/A		Yes	N/A
Electrical Isolations completed	☐	☐	All buried and concealed services identified and marked	☐	☐	Proximity to other buildings, roads, and structures	☐	☐
Digging equipment – flat edge blade only (no teeth)	☐	☐	Hazardous material / contaminated soils identified	☐	☐	Solid Barricading in place where required	☐	☐
Hand digging only	☐	☐	Have all necessary trial holes / trenches been excavated	☐	☐	Safe access / egress required (ramps / ladders / cross-over's)	☐	☐
Work area clearly defined and latest drawings consulted	☐	☐	Existing services protected	☐	☐	Safety Observer required	☐	☐
All applicable drawings/sketches and plans attached	☐	☐	Warning signage displayed	☐	☐	Competent person available for regular inspections	☐	☐
Dial before dig information sought and attached	☐	☐	Dewatering	☐	☐	Emergency Response and Rescue Plan completed and approved	☐	☐
Area scanned for services using penetrating radar	☐	☐	Shoring / Shielding required	☐	☐	Safe means of access and egress to excavation provided	☐	☐
Vehicle and Traffic Management Plans in place	☐	☐	Sloping (Bench / Batter) required	☐	☐	Associated Permit Certificates identified & completed	☐	☐

Further site specific precautions to be taken: Breaking Ground Check Sheet used Y / N :

PPE Requirements – Tick as required and detail any other specific requirements

☐	Safety Helmet	☐	Gloves	☐	Safety Boots	☐	Eye Protection	☐	Respiratory Protection
☐	Coveralls	☐	High Vis Vest	☐	Ear Protection	☐	Fall Arrest System	☐	Other .....

Clearance by Geotechnical Professional (Required for Excavation deeper than 1.5m)

I confirm I have inspected the excavation and declare the ground conditions safe for entry:

	Yes	No
Shoring / Shielding required	☐	☐
Entry of personnel allowed	☐	☐

Geotechnical / Civil Eng. Professional Name:		Signature:		Date:	/ /	Time: (24 hr):	:

PART C: PERMIT ISSUE (completed by Permit Issuer)

I confirm that all work control measures made to ensure the safety of those working under this PTW are in place. The work area has been checked and it is safe for work to proceed under the conditions stated in this PTW.

Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

PART D: PERMIT ACCEPTANCE (completed by Permit Acceptor)

I understand and accept the conditions and precautions detailed above. I shall implement all controls and ensure all personnel have been instructed

Permit Acceptor:		Signature:		Date:	/ /	Time: (24 hr):	:

PART E: PERMIT CANCELLATION (completed by Permit Acceptor)

I confirm that all work for which this PTW was issued has been completed. All personal safety control precautions have been removed including all safety devices and isolations and the workplace has been inspected and left in a clean and safe condition

Permit Acceptor:		Signature		Date:	/ /	Time (24 hr):	:

PART F: PERMIT CLOSURE (completed by Permit Issuer)

I confirm that all work for which this PTW was issued has been completed and verify this PTW has been cancelled by the Permit Acceptor.

Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

PART G: WORKER SIGN-ON			
Print Name	**Signature**	**Print Name**	**Signature**

Breaking Ground and Backfilling Checklist

Plant type and number			
Date		Time	
Excavation purpose (trenching, substation etc...)		Permit to Work No	
Location (e.g. trench X to substation Y)			

		YES	NO	N/A
1.	Supervisor conducted pre-excavation inspection/assessment	☐	☐	☐
2.	Permits in place and excavation location and depth confirmed by all persons listed below	☐	☐	☐
3.	"As constructed plans" attached to permit	☐	☐	☐
4.	Current construction drawings attached to permit	☐	☐	☐
5.	Current services drawings attached to the permit (to include changes in depth and direction of the services)	☐	☐	☐
6.	Location of underground services and structures, within the permit zone of excavation, identified and marked by surveyor with supervisor present.	☐	☐	☐
7.	Is the excavation more than 1 metre away from existing services?	☐	☐	☐
8.	Depth of services and structures within excavation known	☐	☐	☐
	Excavation depth _____ Services depth _____			
9.	All services within 1 meter of the excavation have been be marked out and will be positively confirmed by hand digging.	☐	☐	☐
10.	Spotter and Operator aware of structures within working radius of plant and adjacent to excavation	☐	☐	☐
11.	Spotter used	☐	☐	
12.	Traffic management in place	☐	☐	☐
13.	Excavation JHA complete and current	☐	☐	
14.	Spoil placed minimum of 1 metre away from excavation	☐	☐	
15.	Warning Tape placed over services(if required) prior to backfill	☐	☐	☐

If any question is answered NO - Stop! And contact your Supervisor who is to ensure control measures are in place prior to signing off, such as position of machine and JHA amended

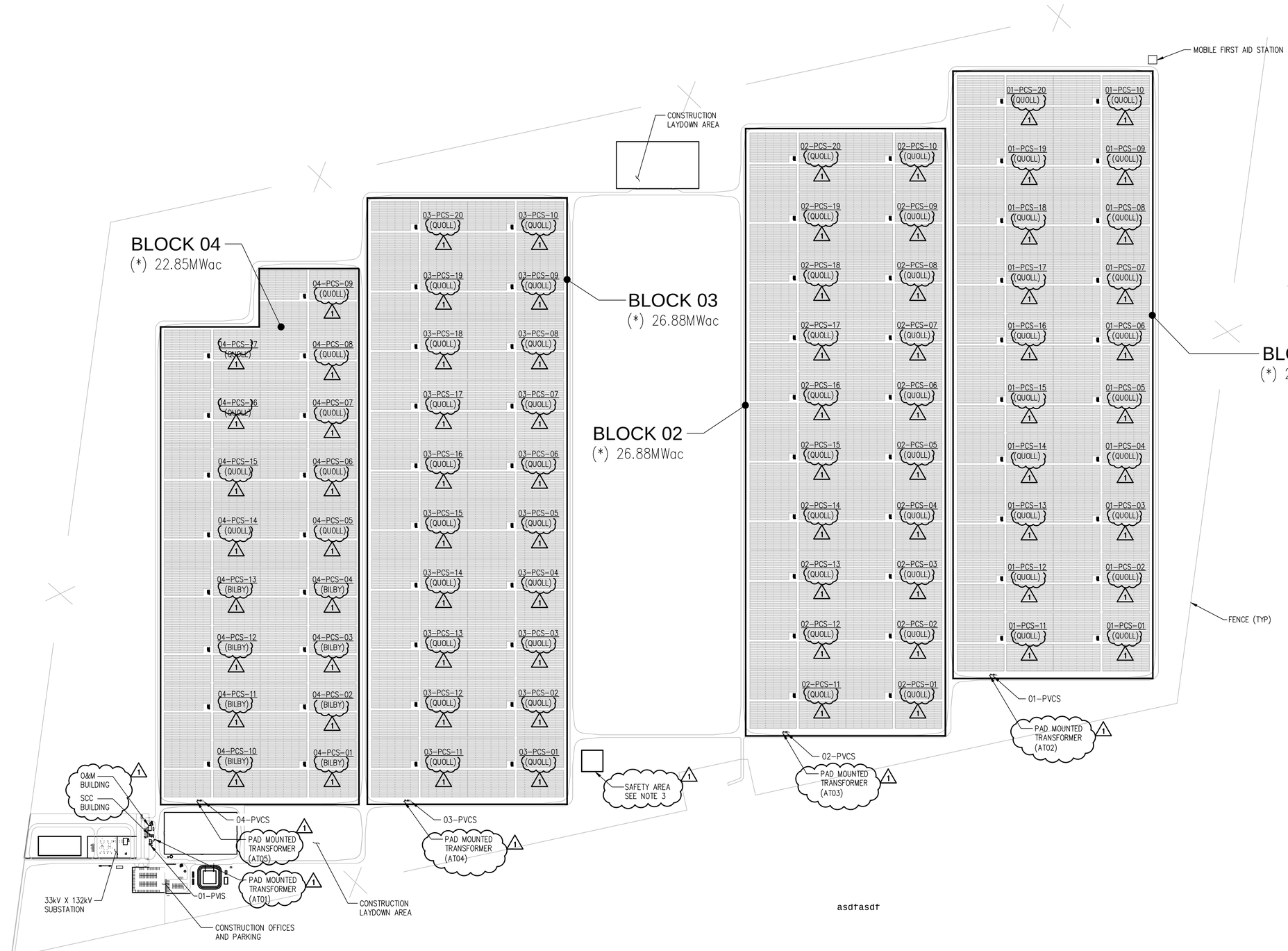
Operators signature: (I have read the plans, visually inspected and understand the permit requirements for this specific work area and will not dig outside of the permit boundary) **(Print name here)**	1. 2.
Spotters signature: (Print name here)	1. 2.
Supervisors signature: (I have read the plans, visually inspected and marked up the specific work area as outlined in the permit) **(Print name here)**	1. 2.
Surveyors signature: (I have read the plans, visually inspected and marked up the specific work area as outlined in the permit) **(Print name here)**	1. 2.
Site Engineers signature: (I have read the plans, visually inspected the location & the documents outlined in the permit) **(Print name here)**	1.
Environmental/Consent Condition signature: (I have read the plans, visually inspected and advise that the proposed disturbance are compliant to project consent conditions) **(Print name here)**	

Appendix Q – Weed Management Activities and Controls Form I01

FORM I01 – Weed Management Activities and Controls

Date	Location	Weed Species	Control Method		Herbicide Used	Who By	Onsite Conditions
			Physical	Chemical			

REFERENCE DRAWINGS	
DWG. NO.	TITLE
E001	ELECTRICAL GENERAL NOTES
E002	ELECTRICAL ABBREVIATIONS AND SYMBOLS LEGEND



OVERALL SITE ARRAY PLAN

SCALE: 1:5000

Vegetation <5-10 cm
Vegetation 10-50 cm
Vegetation >50 cm

NOTES:

1. THIS DRAWING REPRESENTS THE OVERALL SITE. SEE INDIVIDUAL BLOCK DRAWINGS FOR ADDITIONAL DETAILS AND REFERENCES.

(*) WATTAGE SHOWN REPRESENTS THE DESIGN BASIS WATTAGE FOR EACH ARRAY/BLOCK. THE ACTUAL FIELD INSTALLATION OF MODULE WATTAGE (I.E. BIN CLASS) CAN VARY BASED ON MODULE SHIPMENT SCHEDULE FROM THE FS FACTORY AND SAFE HARBOR REQUIREMENTS. THE MODULE WATTAGE/BIN CLASS INSTALLATION IN THE FIELD FOR EACH ARRAY/BLOCK WILL BE CONTROLLED AND DOCUMENTED BY FS CONSTRUCTION AND PERFORMANCE ENGINEERING TO ENSURE COMPLIANCE WITH THE DESIGN BASIS LIMITS AND ENERGY PREDICTION.

2. FOR BLOCK LEVEL DETAIL PLAN DRAWINGS, REFER TO E200 SERIES DRAWINGS.

1 3. HELECOPTER LANDING AREA.

LEGEND:

BLOCK BOUNDARIES

GRAPHIC SCALES

50m 0 100m 200m 300m

SCALE: 1:5000

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
1	03-06-2014	RE-ISSUED FOR CONSTRUCTION	GRP	MN	DM
0	12-12-2013	ISSUED FOR CONSTRUCTION	JR	MN	DM

THIS PRINT IS DESIGNED FOR ISO-A1, (841mm X 594mm) PLOTTING

THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

First Solar.
FIRST SOLAR ELECTRIC LLC.
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BRIDGEWATER, NJ 08807
PHONE: (908) 809-4000
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WWW.FIRST SOLAR.COM

AGL
DEVELOPER:
AGL PV SOLAR DEVELOPMENTS PTY LIMITED

TITLE:
NYNGAN POWER STATION
NYNGAN, BOGAN SHIRE
NEW SOUTH WALES, AUSTRALIA

PROJECT: 102.14 MWac SOLAR PHOTOVOLTAIC SYSTEM

SHEET TITLE:
ELECTRICAL
OVERALL SITE ARRAY PLAN

PROJ. MGR.	PROJ. ENGR.	DR. BY	CHK. BY	DES. BY	SCALE:
GAVIN RANDALL	PETER GREEN	JR	DP	JR	1:5000

PROJ. DIRECTOR	SITE CODE	DRAWING No.	REV.
JIM GIOVAS	ANY1	E003	1
FIRST SOLAR JOB No. SYS-00151			

DOCUMENT No.
NY-FS-EL-DWG-0003

Appendix R – Intentionally left blank

Appendix S – Fauna Handling Record (Form F02) and Perimeter Fence Trench Nest box Monitoring (Form F01)

FORM – F02: FAUNA HANDLING RECORD

No:	**Time:**
Date:	**Location:**

GPS coordinates:

Species name and number of individuals:

Condition of the animal: Living: ☐ Dead: ☐ Injured: ☐ Sick: ☐ Other: ☐

Other:

Vegetation type in which the animal was recorded:

Biological information (where possible) including age, sex, breeding condition and size:

Management action: Captured: ☐ Handled: ☐ Taken to vet: ☐ Other: ☐

Other or comment:

Result of management action: Released: ☐ Euthanised: ☐ Placed with carer: ☐ Other: ☐

Other or comment:

Recorded by:

Name: **Signature:**

FORM-F01: Perimeter Fence, Trench and Nest Box Monitoring Record

Date	Any evidence of bird strike on perimeter fence?		If yes, what location and species?	All nest boxes in place and secure? Are introduced species present?		Actions
	Yes	No		Yes	No	

To be completed monthly.

Photocopy form as required.

Appendix T – Community Consultation Plan

Community Consultation Plan
Broken Hill and Nyngan Solar Plants

AGL Energy Limited

Document Version	1.2
Release State	Internal
Document Classification	Final
Author	Frances Duffy
Approved by	Doug Landfear
Date of approval	05 July 2013

Last updated: 09/07/2013

Table of Contents

1. Introduction

1.1. Background

AGL Energy Limited (AGL), with the support of the Australian Renewable Energy Agency (ARENA) and the NSW Government, will deliver two large-scale solar PV power plants with a total capacity of 155 MW at Nyngan (102 MW) and Broken Hill (53 MW) in New South Wales.

ARENA will provide $166.7 million in funding and the NSW Government will provide $64.9 million in funding to support implementation of the project. Total capital expenditure for the two solar projects is expected to be approximately $440 million.

Solar energy provides clean, renewable energy to power homes and businesses. Solar PV modules have no moving parts and produce no air or water pollution.

The Nyngan and Broken Hill Solar Plants will help AGL meet its renewable energy obligations under the Renewable Energy Target (RET) legislation, and contribute to a sustainable energy future for all Australians.

1.2. Nyngan

The Nyngan site is located in Central West NSW, approximately 10 kilometres west of the Nyngan township. The proposed solar plant will be situated on rural land within the Bogan Shire local government area (LGA). It will be located entirely on one land parcel, north of the Barrier Highway, on Lot 34 DP 751328.

Approximately 300 hectares of land will be required for the proposed solar plant. The site is cleared and flat and currently used for cropping and sheep grazing. The surrounding area comprises predominantly large rural land holdings.

Along with the solar plant, the proposed development would include the installation and operation of a 132kV transmission line, approximately 3 km in length. The transmission line will traverse seven land parcels:

- Three private rural land holdings (Lot 34 DP 751328, Lot 24 DP 751328 and Lot 8 DP 724628).
- The Barrier Highway Road Reserve (owned by the Bogan Shire Council, with the road itself managed by the NSW Roads & Maritime Services).
- A Crown Land parcel (Lot 7300 DP 1156652) owned by the NSW Department of Primary Industries and Catchment & Lands Division, and managed as a Travelling Stock Reserve (TSR 26457).
- A parcel (Lot 25 DP 1181299) owned by Transport for NSW and managed by John Holland Rail Pty Ltd, which contains the rail line.

The transmission line easement will be 40 metres wide.

1.3. Broken Hill

The Broken Hill site is located in far western NSW, approximately five kilometres southwest of the city of Broken Hill. The site is Crown land located within an unincorporated area, administered by the NSW Department of Primary Industries, Catchments and Lands Division. The site is located between the Barrier Highway to the north and the Peterborough - Broken Hill rail line to the south, wholly within Lot 6806 DP 823918.

Approximately 200 hectares of land will be required for the proposed solar plant. The site comprises a cleared, relatively flat area with numerous unsealed access tracks scattered throughout.

The project also includes installation and operation of a double circuit 22kV overhead transmission line, approximately 2.7 kilometres in length, to connect the solar plant to the electricity grid at the TransGrid Broken Hill substation. The transmission line will traverse the Willyama Common (Lot 6667 DP 822054), a parcel owned by ARTC (Lot 1 DP 533250) and a parcel owned by TransGrid (Lot 2 DP 1102040).

1.4. Funding Agreement Requirements

Table 1 lists the community consultation actions required under the Funding Agreement between ARENA and AGL Solar PV Development Pty Ltd (Projectco) for the project, and details the section of this plan where the requirement is addressed.

Table 1: Community Consultation Plan requirements.

Item	Description	Section
(a)	Projectco must, within 40 Business Days from the Commencement Date, develop a Community Consultation Plan for the Project to be agreed with the Commonwealth and, thereafter during the Agreement Period, Projectco must implement and update the Community Consultation Plan.	Entire Plan
(b)	(i) Identification of all key stakeholder groups, including local communities that are potentially affected by the Project.	Sections 4, 5 and 8
	(ii) an outline of the past and proposed community consultation processes to be undertaken that includes the following: a. public notification of meetings. b. itinerary of meetings to be conducted, groups involved and agenda for meetings. c. provision of information at meetings and local information sites. d. documentation of attendees, questions and answers and follow-up issues required arising from meetings. e. an outline for stakeholders on how to access the latest information in respect of community consultation matters.	Sections 6, 7 and 8

	(iii) an outline of how community consultation activities align with Project Milestones.	Section 6
	(iv) a process for maintaining an up-to-date record of submissions, complaints and questions arising from community consultations and the responses provided to these submissions, complaints and questions.	Sections 8 and 10
	(v) a process for regularly a. monitoring and updating the Community Consultation Plan and the community consultations undertaken. b. reporting to the Recipient Parties' management, consortium members (if applicable) and other key groups (whether government or non-government) as required by the Commonwealth to ensure the ongoing improvement of community engagement, that is consistent with relevant industry standards and best practice for this type of project and the types of community consultation to be undertaken.	Section 13
	(vi) a process for regularly providing to the Commonwealth, during the Agreement Period, evidence that Projectco has engaged in community consultation in relation to the Project.	Section 13
	(vii) a timeframe within which Projectco must provide to the Commonwealth notification of all submissions, complaints and questions arising from community consultation and responses provided by Projectco to any submissions, complaints or questions arising from the community consultation.	Section 13
(c)	On Financial Close, Projectco must provide to the Commonwealth certification from an independent, responsible and qualified person that the Community Consultation Plan is, in the reasonable opinion of that person, appropriate and consistent with best practice for this type of project and the types of community consultation to be undertaken, and that, based on reasonable enquiries, it appears it is being implemented.	Attachment A
(d)	The person appointed to provide the certification under clause 16(c) must not be an employee, shareholder, director, other officeholder or related entity of the Recipient or Projectco, or any other person having (or having had) a significant involvement in the Project, the initial application by the Recipient for funding under the Program, or any Report submitted under this Agreement.	Attachment A
(e)	Projectco must make the Community Consultation Plan available to any person from Financial Close to the End Date. Projectco may make the Community Consultation Plan available by publishing it on its website.	Section 14

2. About this plan

2.1. Purpose

The purpose of this plan is to provide a framework for how AGL, with support from First Solar, intend to consult, engage and communicate with the community and stakeholders about the proposed solar plants in Broken Hill and Nyngan.

AGL's responsibility is to manage the community engagement process which will be achieved by developing and implementing this Community Consultation Plan. First Solar's role will be to ensure that all the day to day construction activities are communicated and managed to minimize any impacts on the community. AGL and First Solar will work together to ensure the objectives of the Community Consultation Plan are achieved during the project life cycle.

2.2. Community consultation objectives

The primary community consultation objective is to deliver best practice community engagement, throughout all stages of the development and construction of the solar plants, in accordance with relevant industry standards.

2.3. Framework

The framework that governs how AGL intends to engage with the community was developed by the International Association for Public Participation (IAP2). The IAP2 Public Participation Spectrum guides what type of engagement is required and relevant as the level of public impact increases (see diagram below).

The level of engagement that is considered most suitable for the solar plants will vary as the project progresses. AGL is committed to ensuring the community is at all times informed and opportunities to consult and involve the community will be proactively identified and implemented.

IAP2 Public Participation Spectrum

Developed by the International Association for Public Participation

International Association for Public Participation Australasia

INCREASING LEVEL OF PUBLIC IMPACT

INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Public Participation Goal:	Public Participation Goal:	Public Participation Goal:	Public Participation Goal:	Public Participation Goal:
To provide the public with balanced and objective information to assist them in understanding the problems, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the Public:	Promise to the Public:	Promise to the Public:	Promise to the Public:	Promise to the Public:
We will keep You informed.	We will keep you informed, listen to and acknowledge concerns and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example Techniques to Consider:	Example Techniques to Consider:	Example Techniques to Consider:	Example Techniques to Consider:	Example Techniques to Consider:
• Fact sheets • Web Sites • Open houses	• Public comment • Focus groups • Surveys • Public meetings	• Workshops • Deliberate polling	• Citizen Advisory Committees • Consensus building • Participatory decision-making	• Citizen juries • Ballots • Delegated decisions

2.4. Approach

To achieve these objectives, AGL's approach to community and stakeholder engagement will be to:

- Embed community and stakeholder engagement as a key component of the overall delivery of the project.
- Develop and maintain trust in the community by fostering a culture of open, transparent, honest and two-way communication channels.
- Demonstrate a genuine commitment to the community by creating opportunities for community participation in the project.
- Tailor communications to provide the right information, to the right people and at the right time using the most appropriate targeted consultation and communication tools.
- Manage expectations by explaining the project phases and milestones that need to be achieved for the project to proceed.
- Explain the negotiable and non-negotiable aspects of the project and any opportunities where the community is able to influence any final decisions.
- Ensure all consultation is proactive, informative and adequately addresses community concerns.
- Use project milestones to raise greater awareness about the proposed solar plants and proactively promote the benefits.
- Encourage the community and stakeholders to 'get involved' and provide feedback about key elements of the project.
- Regularly report to the community on the outcomes of consultation to demonstrate how their feedback and involvement has shaped final outcomes.
- Provide timely and accurate responses to enquiries and complaints.
- Work with other authorities and government agencies to identify opportunities to integrate our communications when appropriate.
- Identify and incorporate lessons learned.
- Maximise the community benefits of the project and explore opportunities to support local business owners and suppliers when possible during the construction period.
- Maintain appropriate community engagement professional resources to develop, deliver, manage and monitor community consultation activities and initiatives.

3. Key messages

Key messages are an important tool to shape AGL's engagement with the community. These messages will help to promote community understanding about the key elements of the project.

The following key messages will be used for the AGL Solar PV Project.

3.1. AGL

- AGL is a leader in the Australian energy industry with a track record dating back more than 175 years.
- AGL is one of Australia's leading integrated renewable energy companies and is Australia's largest developer and operator of renewable generation assets.

3.2. Solar Energy

- Solar energy can make an important contribution to greenhouse gas reduction and other carbon emission minimisation schemes.
- Solar plants are power stations that use energy from the sun to generate electricity. Photovoltaic (PV) modules convert sunlight into electricity which is fed into the electricity grid.

3.3. AGL Solar PV Project

- The AGL Solar PV Project is being supported by the ARENA and the NSW Government.
- Together with First Solar, AGL will deliver large-scale solar plants with a total nominal capacity of 155 MW at two locations in New South Wales.
- Nyngan (102 MW) and Broken Hill (53 MW) were selected by AGL due to a combination of strong solar resource, proximity to the existing electrical grid, relatively flat, rural topography and the existence of appropriate buffers to residential areas.
    - Nyngan - The Nyngan Solar Plant will produce enough electricity annually to meet the needs of approximately 33,000 average households in NSW.
    - Broken Hill – The Broken Hill Solar Plant will produce enough electricity annually to meet the needs of approximately 17,000 average NSW households.

3.4. Planning

- The projects are subject to standard environmental planning approval by the NSW Department of Planning and Infrastructure (DoPI).
- The community had an opportunity to formally submit comments regarding the projects during the exhibition period for each Environmental Impact Statement (EIS). The exhibition period ran between 29 October and 30 November 12 for the Broken Hill Solar Plant Environmental Assessment and between 14 March to 15 April 2013 for the Nyngan Environmental Impact Statement.

- DoPI approved the Broken Hill Solar Plant in April 2013. It is expected the DoPI will make a determination regarding the Nyngan Solar Plant in July 2013. Pending project approvals, construction is expected to start at Nyngan in early 2014 and be completed by mid-2015. Construction will start at Broken Hill in mid-2014 and be completed by the end of 2015.

3.5. Economic

- AGL and First Solar aim to provide economic benefits to the local community including local businesses, retailers and suppliers.
- It is expected that the construction of the Nyngan Solar Plant will generate up to 300 direct jobs at peak construction. Construction of the Broken Hill Solar Plant will generate up to 150 local jobs.

3.6. Construction

- AGL will work with First Solar to minimise construction impacts of each plant on the local communities.
- Appropriate mitigation measures and monitoring will be implemented to ensure all work is done in accordance with permit requirements, minimising potential impacts.
- AGL will adhere to the approved construction hours.
- AGL will show respect for the local heritage, community icons, community identity as well as the cultural and indigenous history.

3.7. Consultation

- AGL is committed to directly engaging with the local community in an open and transparent manner that encourages two-way communication.
- AGL will work with the communities to identify and manage potential impacts and seek feedback on issues that may arise.
- AGL will communicate the expected benefits of the project.

4. Stakeholder analysis

The key community stakeholders associated with this project will include a range of local community groups and individual members of the community, including nearby residents.

Tables 2 and 3 detail identified stakeholders for the Nyngan and Broken Hill projects that have potential to be impacted by the projects.

These tables will be updated throughout the life of the project to reflect the changing nature and concerns of key stakeholders and identification of additional stakeholders.

Table 2: Stakeholders identified for Nyngan Solar Plant project.

Stakeholder Group	Specific Stakeholders	Concern or interest in project
Federal Government	• Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (Ministers: Mark Butler and Kim Carr) • Clean Energy Regulator • Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) (Minister: Mark Butler) • Department of Infrastructure and Transport (Minister: Anthony Albanese) • NECA: National Electrical and Communications Association • ARENA: Australian Renewable Energy Agency	• Planning approvals • Regulatory compliance • Environmental management • Consultation • Contribution to project funding • Knowledge Sharing
NSW Government	• Department of Planning (Minister: Brad Hazzard) • Department of Environment, Climate Change and Water (Minister: Robyn Parker) • Department of Primary Industries, Catchment and Lands Division • NSW Roads and Ports (Minister: Duncan Gay) • NSW Transport (Minister: Gladys Berejiklian) • Regional Infrastructure and Services (Minister:Andrew Stoner)	• Planning approvals • Regulatory compliance • Environmental management • Consultation • Contribution to project funding
Local Government	• Bogan Shire Council • Mayor (Cr Ray Donald) • Deputy Mayor (Cr Jim Hampstead) • Councillors. (Hazel Griffiths, Glen Neill, Elaine McLaughlin, Kevin Ryan, Danny Dutton, Jodi Douglas and Greg Deacon)	• Planning approvals • Health and safety of local residents • Impact on local business • Local impacts-access, traffic, wear and tear on roads visual amenity • Community consultation • Community wellbeing • Project progress updates
Elected Representatives	• Federal Member for Parkes (Mark Coulton) • State Member for Barwon (Kevin Humphries)	• Impact on local constituents • Project progress updates
Roads and Utilities	• Essential Energy • Roads and Maritime Services (RMS)	• Impact on assets • Potential for construction program to clash with asset maintenance
Business	• Local retailers • Dubbo chamber of commerce and industry • Local suppliers	• Access to business for customers and deliveries • Potential for loss of trade • Potential for local supply resourcing • Consultation and communication • Project progress updates

Community	• Local residents, landholders and property owners • Directly affected residents and nearest neighbours	• Access to private property • Environmental management • Health and safety of local residents • Traffic impacts • Access to services • Noise, dust and visual amenity • Financial incentives • Consultation and communication • Project progress updates
Schools/Education Institutions	• Nyngan High School • Nyngan Public School • St Joseph's Nyngan • Nyngan Pre School Kindergarten • Western TAFE – Nyngan College	• Traffic impacts • Educational/research opportunities • Consultation and communication
Local Interest Groups	• Bogan Community Tourism & Business Group • Nyngan Ag Expo Committee • CWA (Country Women's Association) • Historical Society • Local Government Shires Association (LGSA) • Nyngan Show Society • Bird-watching groups	• Community and environmental impacts • Impact on cultural heritage • Traffic impacts • Impact on local business • Consultation and communication
Indigenous	• Canbelego Local Aboriginal Land Council • Local indigenous groups and community leaders	• Impact on cultural heritage
Other	• Nyngan District Hospital • Nyngan Community Health Centre • Key health facilities • Anglican, Catholic and Uniting churches	• Access • Consultation and communication
Media	• Nyngan Observer • The Land Newspaper • Cobar Weekly • ABC Western Plains • Rebel FM • Outback Radio 2WEB • Southern Cross TV • Prime TV • SBS • ABC TV	• Community and environmental impacts • Delivery / Cost • Regular media releases • Project progress updates
Emergency Services	• Police • SES • Rural Fires Services • Ambulance Services • Royal Flying Doctors Service	• Access • Changes to road use • Traffic impacts • Consultation and communication

Table 3: Stakeholders identified for Broken Hill Solar Plant project.

Stakeholder group	Specific stakeholders	Concern or interest in project
Federal government	• Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (Ministers: Mark Butler and Kim Carr) • Clean Energy Regulator • Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) (Minister: Mark Butler) • Department of Infrastructure and Transport (Minister: Anthony Albanese) • NECA: National Electrical and Communications Association • ARENA • SEWPAC	• Planning approvals • Regulatory compliance • Environmental management • Consultation and communication • Contribution to project funding • Knowledge Sharing
NSW government (Note some agencies have had name changes from June 2011)	• Department of Planning (Minister: Brad Hazzard) • Department of Environment, Climate Change and Water (Minister: Robyn Parker) • NSW Roads and Ports (Minister: Duncan Gay) • NSW Transport (Minister: Gladys Berejiklian) • Minister for Regional Infrastructure and Services Andrew Stoner • Department of Primary Industries, Catchment and Lands Division • Industry and Investment NSW • NSW Office of Water (Department of Primary Industries as of June 2011) • Western Catchment Management Authority • Murray-Darling Catchment Management Authority	• Planning approvals • Regulatory compliance • Environmental management • Consultation and communication • Contribution to project funding
Local government	• Broken Hill City Council • Mayor (Cr Wincen Cuy) • Councillors (Robert (Bob) Algate, Peter Black, Marion Browne, David Gallagher, Branko Licul, Jim Nolan, Jim Richards and Darriea Turley)	• Planning approvals • Health and safety of local residents • Impact on local business • Local impacts, including access, traffic, roads and visual amenity • Community consultation and communication • Community wellbeing • Project progress updates
Elected Representatives	• Federal Member for Farrer (Sussan Ley) • State Member for Murray-Darling (John Williams)	• Impact on local constituents • Project progress updates
Roads and Utilities	• Essential Energy • TransGrid • Roads and Maritime Services (RMS)	• Impact on assets • Potential for construction program to clash with asset maintenance
Business	• Local retailers • Broken Hill Chamber of Commerce • Local suppliers • Perilya Broken Hill Limited • PlatSearch NL	• Access to business for customers and deliveries • Potential for loss of trade • Potential for local supply resourcing
Emergency Services	• Police • Ambulance • SES • Rural Fire Services • Royal Flying Doctor	• Access • Traffic impacts/changes

Stakeholder group	Specific stakeholders	Concern or interest in project
Community	• Local residents, landholders and property owners • Directly affected residents and nearest neighbours	• Access to private property • Environmental management • Health and safety of local residents • Traffic impacts • Access to services • Noise, dust and visual amenity • Weed control • Electric and magnetic fields • Perceived impacts on valued places • Project progress updates
Local Interest Groups	• Broken Hill Historical Society • Barrier Field Naturalist Club • Agricultural Associations (Field Days, Expos) • Summer Vibes Festival • Local Government Shires Association (LGSA)	• Environmental impacts • Traffic impacts
Schools/Education institutions	• Broken Hill Public School • Broken Hill High School • Morgan Street Public School • Willyama High School • Western TAFE – Broken Hill College • Playtime Pre-School Centre • Happy Day Pre-School • Rainbow Pre-School • Alma Bugdlie Pre School	• Traffic impacts/changes • Opportunities for education/research •
Other	• Broken Hill Base Hospital • Health Services and key health facilities • Ten local churches	• Access • Traffic impacts/changes
Indigenous community	• Yancowinna Local Aboriginal Land Council • Local indigenous groups and community leaders	• Impact on Indigenous heritage
Media	• Barrier Daily Truth • ABC Broken Hill • Hill FM • 2DRY FM • Hype FM • The Land newspaper • ABC TV • Southern Cross TV • Win TV • SBS TV	• Community and environmental impacts • Delivery / Cost • Project progress updates

5. Community risk analysis

There are a range of community and communications risks that may arise during the planning, construction and/or operation of the solar plants. It is critical that these issues are considered and mitigated to ensure the best outcome is achieved for both the projects and the local community.

Table 4 presents an analysis of potential community risks and associated mitigation measures for the projects.

Table 4: Identification of risks and associated mitigation measures

Key issue / risks	Detail	Response
Overall		
Community dissatisfaction resulting in the project being delayed	Community members being opposed to the project and delaying its commencement or completion	• Implement this consultation plan to ensure the community is well informed, engaged and consulted with, is aware of the benefits of the project and supports the project whenever possible. • Minimise the potential impact on the community throughout all stages of the project. • Identify project champions.
Negative media coverage	Negative media reports generated by disgruntled locals.	• Extensive consultation to ensure the community is informed and whenever possible, supportive of the works. • Develop media strategy including media protocols.
Escalated complaints	Community concerns not being addressed and escalating to a government agency for resolution	• Have a robust complaints handling procedure in place. • Initial response to be made to all complaints within one business day. • Minimise impacts on the community during all stages of the project. • Ensure all potential impacts resulting from works are clearly defined prior to works commencing, (including mitigation measures), to manage community expectations.
Uninformed community	Community members feeling that they are not informed about the work	• Ensure all communications tools are utilised as appropriate to effectively engage and inform the community.
Community suggestions	Community suggestions not able to be accommodated	• Ensure that the community is aware of which areas of the project can be influenced by community input and which are non-negotiable. • Report to the community on the outcomes of feedback and subsequent decisions.

Remoteness can create difficulty in distributing information	Complaints Negative media	• Use a range of community engagement channels (project website, letter box drops, advertising, meetings information boards etc) to ensure the right information is provided to the right people at the right time. • Proactively inform the community about how they can get project information. • Explore the use of electronic media and social networking (i.e. Facebook, Twitter) where appropriate.
Reputation impact	Negative reputation for the Australian or NSW Governments, AGL or First Solar arising from project works	• Engage and consult with the community in a transparent, fair and trustworthy manner • Ensure positive social sustainability initiatives are incorporated wherever possible. • Proactively communicate the benefits of the project. • Minimise the potential impact on the community and stakeholders throughout all stages. • Ensure all team members, contractors and sub-contractors attend community relations inductions.
Workforce Influx	**Pressure on local accommodation, services and facilities**	• Work with local authorities and accommodation providers to ensure local accommodation, services and facilities are adequate for the additional population during the project. • Maximise the use of local and regional contractors, manufacturing facilities and materials during construction, through liaisonwith local industry representatives. • Provide a purpose built accommodation facility for workers and assist in the provision of services. • Develop a workforce plan to manage workforce behavior during the project and manage interaction with the community.
Planning		
Transparency during planning process	Community not understanding the planning process and when/how they have an opportunity to formally provide feedback	• Ensure open communication about the progress of the planning process and how input can be provided. • Ensure extensive advertising and notification to comply with regulations and to ensure that there is an opportunity for the community to be involved in the engagement process and to provide comment.

Construction		
Construction traffic impacts	• Increase in traffic movements • Changed traffic conditions • Delays • Safety of road users	• First Solar will ensure the appropriate traffic controls are in place by implementing a Traffic Management Plan: o Restricting major traffic changes whenever possible. o Providing extensive advertising and signage to warn of traffic changes and detours. o Using Variable Message Signage (VMS) where practical to alert road users to traffic changes. o Liaising with other transport providers to limit impacts. o Notifications to advise the community of oversize or high volume traffic – e.g. deliveries to site. o Consideration of local bus schedules (school and Country Link).
Ecology	• Impacts on visual amenity • Vegetation removal • Erosion and sediment control • Impacts on local fauna • Weed management • Feral pests	• Site management and restoration plans will be developed and implemented in accordance with the Planning Consent requirements to ensure the appropriate mitigation measures are in place. • Opportunities to engage local pre-schools with landscape regeneration through seed propagation will be explored.
Noise	• Construction noise - day and night	• First Solar will implement noise mitigation strategies through the Construction Noise Management Plan as required such as: o Choose suitable equipment and operate within manufacturers guidelines. Avoid the operation of machinery near noise sensitive areas. o Schedule noisy works at times of lowest impact. Gain approval for works outside of normal working hours (7am to 6pm Monday to Friday; 8am to 1pm Saturday) and notify residents. o Ensure community relations inductions include noise minimisation (e.g., turning of machinery, shouting etc.) • First Solar will conduct appropriate noise monitoring to ensure compliance.
Dust	• Public health issue, nuisance	• First Solar will implement targeted dust mitigation strategies such as: o Use equipment least likely to result in dust production. o Choose construction methodologies which limit dust.

		o Limit works during adverse wind conditions. o Utilise water trucks to minimise dust creation and carry. • First Solar will conduct dust monitoring to ensure compliance.
Workforce Behaviour	• Complaints • Negative media • Reputation • Loss of community confidence/support	• Community relations inductions • Project contact cards • Media strategy
Out of hours work	• Night works • Night deliveries	• Notifications will be delivered to advise about all out-of-hours work required. • First Solar will conduct out-of-hours works only when there is a safety or construction requirement to do so.
Property	• Damage to property during construction • Damage to community assets	• Property condition surveys (may include fences, roads, gates and outbuildings) will be offered to property owners in the surrounding areas as appropriate, prior to construction commencing. • Asset condition reports will be offered to Council (may include local public roads and kerb and guttering),
Graffiti, vandalism	• Project delays • Escalated costs • Reputation • Negative media	• Construction site management plan • Site security
Community (site visitors) Site workers safety	• Project delays/shutdowns • Reputation • Negative media • Loss of community confidence/support	• Construction site management plan • Safety signage • Site Security • Site visitor safety inductions • Personal protection equipment (PPE)
Visual Amenity	• Interrupted view of rural setting • Tourism	• Screening from existing trees • Minimise vegetation clearing and re-vegetate where necessary • Site may be promoted to tourists to expand the visual interest of the area
Cultural Heritage	•	• Construction site management plan – all works shall cease immediately if human skeletal remains are found. NSW Police and OEH shall be called. • The Heritage Branch shall be contacted should items of historical value be found.

6. Engagement activities and tools

A range of communication activities and tools will be used to achieve the consultation objectives detailed in this plan, as described in Table 5.

Table 5: Communication activities and tools

Tool	Detail	Stage				Responsibility
		Development	Prior to construction	Construction	Operations	
Dedicated 1800 community enquiry line, project email and PO Box address.	• A free-call 1800 community enquiry line, project email and PO box address will be in place so community members can contact the project team directly. • Project contact information will be included on all project collateral distributed in the community as well as site signage, hoardings and the project website. • All responses to the community will be provided in accordance with the 'Community Contact Procedure' detailed in section 7 of this plan.	✓	✓	✓	✓	AGL • Setting up and managing these channels. First Solar • Assisting with responses to the community in accordance with the 'Community Response Procedure' detailed in this plan. This may include but is not limited to investigating the issue, assisting with preparation of a response and providing a suitable representative to meet with the community member as requested by AGL.
Project websites	• Dedicated project websites will provide an overview of the AGL Solar PV Project, including information about project milestones and other elements of the project likely to be of interest to stakeholders and the community. • Key project documentation related to the permit applications, as well as copies of all print communications (e.g. newsletters, notifications and media releases), will be available to view on the websites. • The websites will include details on how to contact the project	✓	✓	✓	✓	AGL • Management of the project website. First Solar • Provision of project information, draft content and images as requested by AGL.

	team directly as well as providing opportunities to submit enquiries to the team directly, via the websites.					
Attendance at community days/events	• The AGL project team will proactively participate in local community events (e.g., Nyngan Agricultural Show, AGL Cube event at Broken Hill) to create awareness and raise the profile of the AGL Solar PV Project and provide an opportunity for the community to meet the project team and ask questions. • Collateral will be made available – such as fact sheets, FAQs Feedback forms. • At these events, the community will be encouraged to register their details to receive project updates.	✓	✓	✓		AGL • Overall management AGL's presence at the community events. First Solar • Provision of project information, images and appropriate project team representatives as requested by AGL.
Information Centre/ information board	• AGL plan to set up an Information Centre in a shop front in Broken Hill. This will provide a one-stop-shop and will be manned at specified hours. The Information Centre will provide an opportunity for the local community to meet face-to-face with an AGL representative to ask questions and discuss concerns they may have. It will also provide an opportunity for visitors to view and/or be provided with current project information. • AGL will establish a centrally located project information board in Nyngan. This will be regularly updated with current project information.		✓	✓		AGL • Overall management of the Information Centre and information board. First Solar • Provision of project information and images as requested by AGL.
Local Viewing Platform	• AGL and First Solar will work with the local Councils to explore opportunities to construct a plant information kiosk (with relevant information about the project) at an appropriate location.		✓	✓	✓	AGL • Cooperation with Council in relation to the information kiosk. First Solar • Cooperation with AGL on the site selection for a kiosk, in consultation with the relevant Council.
Community Consultative Committee (CCC)	• AGL plan to set up a CCC at each location. The committees will comprise representatives of key stakeholder groups and the local community and relevant AGL and First Solar project team members. • A Terms of Reference separate to this strategy will be developed for the CCC. (See section 7 for more information about the CCC.)		✓	✓		AGL • Establish and manage the Broken Hill and Nyngan CCCs. First Solar • Provision of project information, images, presentation material and a project team member to present when requested by AGL.

Community information sessions	• Community information sessions will be held prior to construction commencing and when appropriate at other key milestones throughout the life of the project. • The Community information sessions will provide opportunities for the community to be updated on the status of the project and to raise questions or concerns they may have, directly with the project team. • Community information sessions will be advertised in the local newspapers at least 1 week prior. • Feedback forms will be provided to community members who attend these sessions.	✓	✓	✓		AGL • Organisation and management community information sessions. First Solar • Provision of project information, images, presentation material and a suitable project team member to present when requested by AGL.
Community Newsletters	• A community newsletter providing an update about the project (including project status, benefits, environmental monitoring and community funding) will be distributed to the local community and key stakeholders during the various phases of the project. • Could include a 'good news' section to highlight positive community interactions and/or local event participation.		✓	✓	✓	AGL • Develop, produce and distribute community newsletters. First Solar • Provision of project status information as requested by AGL.
Letter box drop	• Letters detailing important project information will be letterbox dropped to community members at important project milestones (e.g., start of the exhibition period) and throughout the various phases of the project.	✓	✓	✓	✓	AGL • Develop, produce and distribute letterbox drops. First Solar • Provision of project status information as requested by AGL.
Construction notifications	• Joint branded construction notifications will be letterbox dropped to neighbours near the project sites at least 7 days prior to work commencing, and at key project stages during the construction. Details will include: o Scope and timing of work. o Hours of work. o Mitigation measures that will be in place during the work. o Any out-of-hours work is required. o An offer to meet if they would like to discuss the project. o Traffic changes/detours o All project contact details		✓	✓		AGL • Approve notifications prepared by First Solar. First Solar • Draft, produce and arrange distribution of approved notifications to delivery zone agreed by AGL.

Factsheets/FAQs	• Fact sheets/FAQs will be developed and distributed to the local community to provide an overview of the project, as appropriate. • Topic-specific fact sheets (such as noise or dust mitigation) will be developed for distribution during the construction period.	✓	✓	✓		AGL • Prepare and approve all fact sheets related to the projects. First Solar • Provide information about the construction of the projects as requested by AGL
Advertisements	• Advertisements will be placed in local newspapers to keep the broader community informed about key project stages such as: o Exhibition periods o Commencement of construction o Major traffic impacts o Other construction milestones.	✓	✓	✓		AGL • Prepare and approve all advertisements related to the AGL Solar PV Project. First Solar • Provide information about the construction of the AGL Solar PV Project as requested by AGL.
One-to-one meetings/ door knocking	• One-to-one meetings will be offered to key stakeholders on a regular basis. This will provide opportunities for any concerns to be addressed upfront. Door knocking will be carried out when appropriate, to provide the community with updates on key stages of work where there is potential for construction impacts.	✓	✓	✓	✓	AGL • Arrange and attend one-to-one community meetings/door knocking. First Solar • Provide a suitable representative from the project team as requested by AGL.
Briefings	• Briefings will be offered to elected representatives, local councils and/or any other stakeholders throughout the life of the projects. These may include Chambers of Commerce, Service Groups and other interested community groups.	✓	✓	✓	✓	AGL • Arrange and attend briefings. First Solar • Provide a suitable representative from the project team as requested by AGL.

On-site signage and fencing	• Joint branded community signage, including all project contact information, will be installed at the site entries prior to work commencing and for the duration of the construction period.		✓	✓	✓	AGL: • Approve community signage. First Solar • Develop, produce and install community signage.
Project contact cards	• Project contact cards detailing all project contact details (1800 number, email, and postal address) will be distributed as required to the local community. • Cards will also be provided to all project team members and site crews (AGL and First Solar) to distribute if approached by a member of the community.	✓	✓	✓		AGL: • Develop and manage the production of project contact cards. First Solar: • Distribute to all project team members, contractors and sub-contractors.
Induction and project toolbox talks	• As part of the project induction that all construction workers must attend prior to commencing work, AGL's community engagement expectations and protocols will be discussed.		✓	✓		AGL: • Develop document detailing community engagement protocols and expectations. First Solar: • Roll out community engagement protocols and expectations to all construction workers prior to them starting work on site and ensure protocols are adhered to at all times.
Site tours	• Site tours will be offered to targeted community members and key stakeholders during construction. • When appropriate, tours may also be extended to other groups such as schools, universities and other stakeholders interested in solar power and renewable energy.			✓	✓	AGL: • Facilitate with First Solar site tours during construction. First Solar: • Facilitate with AGL site tours during construction. • Provide a suitable project team member to conduct the tours.

Media Releases/media event opportunities	• A media release will be drafted to coincide with major program milestones to generate interest and to support other communication activities. • Community and/or media events to be held at key milestones (such as the 'sod-turn 'and 'switching on') to promote the benefits of the project and celebrate achievements. See Section 11 for media protocols Note: More detail will be provided in a separate project Media Strategy.	✓	✓	✓	✓	AGL: • Develop and issue all media release. • Respond to and manage all media enquiries about the AGL Solar PV Project. • Overall management of media events. First Solar: • Provide information about the construction of the AGL Solar PV Project as requested by AGL. • Adhere to AGL media protocols. • Provide event assistance to AGL as required.
Social Media	• Social media such as Facebook and Twitter may be utilised for easy and immediate distribution of information updates. This will be used in accordance with the overarching AGL social media strategy and protocols.		✓	✓		AGL: • Develop and issue all social media updates. First Solar: • Provide information about the construction of the AGL Solar PV Project as requested by AGL.
Photography / Videography (time-lapse photography)	• Still and time-lapse construction footage will be captured periodically and at key stages of the project. • Images can regularly be uploaded to the project website and used in other community collateral.			✓		AGL: • Work with First Solar to determine the regularity of footage being collected and how it will be used. First Solar: • To arrange for footage to be captured and provide usage rights to AGL.

7. Community Consultative Committee

AGL plan to establish a Community Consultative Committee (CCC) for both projects. The CCCs will be established during the planning stage of the projects and will continue until completion of construction.

Key objectives of the CCC for each project will be to:

- Establish an effective and efficient communications process with community and key stakeholders.
- To provide clear, consistent and timely information.
- Build community trust and confidence in the project.
- Ensure the community and stakeholders are kept informed about planning and construction aspects of the project until completion.
- Develop and strengthen long-term partnerships with key community stakeholders.
- Ensure issues are managed collaboratively and that there are no surprises.
- Function as a conduit for transmitting information between the AGL Solar PV Project Team and stakeholders.
- Provide a discussion forum for the AGL Solar PV Project Team and stakeholders.
- Provide feedback to the AGL Solar PV Project Team.

Each committee will comprise of representatives from key stakeholder groups who have demonstrated an interest in, or connection to, the AGL Solar PV Project, as well as relevant AGL and First Solar project team members and community representatives.

It is anticipated that membership on the CCC may include but not be limited to:

- Impacted landowners.
- Community members.
- Representatives from community and business groups.
- Government representatives.
- Project representatives.

AGL will make a reasonable effort to ensure the CCC contains a broad representation of stakeholders; however the formation of the CCC will be dependent on appropriate individuals within the community expressing an interest to be involved. Non-committee members from the local community will be welcome to attend the meetings to observe and ask questions if time permits.

CCC meetings will be held at least quarterly or more regularly as deemed appropriate. An agenda will be issued by the project team one week prior and also placed on the project website. Meetings will be advertised in local newspapers.

CCC members will have an opportunity to list specific topics of concern on the meeting agenda. Topics are likely to be of a social, environmental or economic nature and may include items such particular construction methods, materials used, traffic control, environmental monitoring and use of local resources.

Minutes will be made of each meeting that will include details of questions, answers and follow-up actions required. A draft copy of the minutes will be distributed to each committee member within one week of the meeting. Members will be invited to provide

feedback on the draft meeting minutes so that comments can be considered and incorporated when appropriate. The final version of the minutes will be distributed to all members ahead of the next meeting and placed on the project websites. Meeting minutes will also be made available at the Broken Hill Information Centre and on the Nyngan project information board.

8. Stakeholder database

A stakeholder database has been established using Consultation Manager software, to record and track details of all community contact (including submissions, enquiries, complaints, meetings, events and questions arising from community consultation).

Consultation Manager will continue to be utilised to capture community members contact details, the nature of the contact, how the contact was received, any concerns raised and any actions required, as well as project team responses, follow-up and close out.

Consultation Manager will also facilitate the electronic distribution of project information and notifications. It can also be used to provide identification of issues and trends to inform mitigation strategies, as well as providing comprehensive community interaction reporting data.

9. Community response procedure

The timely and effective management of queries and complaints is a critical component to the successful delivery of the Broken Hill and Nyngan Solar Plants. AGL's approach to complaints management is:

- We will be transparent with the community about the complaints handling process.
- We will provide the right channels to make it simple for the community to make a complaint. Information about how and where to complain should be well publicized.
- Receipt of each complaint will be acknowledged within one business day and resolved promptly in accordance with their urgency.
- Complainants will be kept well informed about the progress of their complaint.
- Each complaint will be addressed in an equitable, objective and unbiased manner.
- We will be open to feedback and genuinely endeavor to resolve the complaint through reasonable investigation.
- We will regularly report on complaints and analyse trends to strive for continuous improvement.
- All relevant, statutory and regulatory requirements in relation to complaints management will be satisfied.

The community will be able to submit enquires or complaints to AGL via a number of different channels including the dedicated 1800 Community Consultation Hotline, mail, email or via the projects micro-site. AGL and First Solar staff members will be available during normal business hours.

The AGL Community Engagement team will be responsible for managing all queries and complaints about the Broken Hill and Nyngan Solar Plants during the development and construction stages. Escalated complaints will be managed directly by the Community Engagement Manager. In the instance that a complaint cannot be resolved, an independent mediator will be utilised when appropriate.

When a complaint is received, it will be appropriately investigated by the project team and the complainant will be kept updated about the status of their complaint. Once a solution is determined, the complainant will be responded to in writing to ensure the complaint is appropriately actioned.

All complaints will be recorded in the stakeholder database and will detail:

- Who made the complaint.
- When it was made.
- How it was made.
- What it was about.
- What action was taken to investigate it.
- How it was actioned.

All complaints will be categorised in a meaningful way to allow analysis of any trends in complaint reporting.

10. Incident and issues management

The appropriate construction and environmental management plans will be developed by First Solar and approved by AGL to ensure any potential incidents or issues on site are appropriately managed.

The AGL Community Engagement Manager will be informed in a timely manner of any site incidents or issues that have the potential to impact the community or be noticed by the community.

11. Media and government relations

The AGL Media Team will be responsible for developing all media releases and managing all interactions with the media about the Broken Hill and Nyngan Solar Plants. No First Solar or AGL employee is permitted to speak to the media about the projects without first obtaining approval from the AGL Media Manager and Project Manager. Any media enquiries should be directed immediately through to the AGL media team.

The AGL Project Manager and Government Relations Team will be responsible for all interactions with Local, State and Federal Government about the projects.

The AGL Community Engagement Team will work closely with the AGL Media and Government Relations teams to ensure accurate messaging and a consistent approach is adopted. Opportunities will be identified throughout the life of the project to proactively engage the media and appropriate government representatives to positively promote the projects.

12. Community engagement inductions

Prior to commencing work, all site workers will participate in a community engagement induction as part of their initial site induction. This will include such items as:

- Always be polite and courteous.
- Do NOT attempt to answer enquiries, instead direct the community to the AGL community Relations team by providing a Project Contact card.
- Remember – there is no such thing as an 'off the record' conversation.
- If approached about an urgent matter – immediately advise the site supervisor who will contact the Community Relations manager and/or Media manager.

13. Review, updating and reporting

This plan will be regularly monitored, reviewed and updated to ensure a culture of continuous improvement is adopted and any lessons learned are incorporated. This will ensure the plan continues to be consistent with relevant industry standards and best practice for this type of project and the types of consultation to be undertaken.

The Community Manager for the project will report to the Power Development Leadership Team (PDLT) on the progress of community engagement activities and issues on a monthly basis. The PDLT will report the findings to the General Manager for Merchant Energy who will brief the AGL Executive Team.

During the Funding Agreement period, AGL will provide a community consultation report to ARENA on a half-yearly basis, or more frequently as requested by ARENA, to provide evidence that AGL has effectively engaged in community consultation in relation to the Project. This report will include notification of all submissions, complaints and questions arising from community consultation and responses provided by AGL to any submissions and/or complaints or questions arising from the community consultation.

AGL will make the Community Consultation Plan available to any person on request from Financial Close to the End Date.

Attachment A – Independent Certification

KJA

strategic engagement & communications

5 July, 2013

Doug Landfear
Manager Power Development (Solar)
AGL Energy Limited
L22, 101 Miller Street
North Sydney NSW 2060

By email: dlandfear@agl.com.au

Dear Doug,

I certify that the Community Consultation Plan developed by Projectco is consistent with best practice for this type of project and the types of community consultation to be undertaken, and that, based on reasonable enquiries, it appears it is being implemented; and

I also confirm that I am not an employee, shareholder, director, other officeholder or related entity of the Recipient or Projectco, and I have not had any significant involvement in the project, the initial application or any report submitted under the funding agreement.

Yours sincerely,

Deborah Cameron
Project Director
Certified IAP2 Practitioner

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Appendix U – Incident Management Protocol including Initial Incident Notification Report APP-SMP-22B

First Solar

NYNGAN SOLAR PV POWER STATION

OEMP SUB PLAN

Incident Management Protocol

September 2015

OWNERSHIP AND PERMITTED USE

This document is the property of First Solar (Australia) Pty Ltd and has been prepared for NSW Department of Planning and Environment for the purpose of approving the project's OEMP and is not permitted for any other use.

DOCUMENT CONTROL						
Rev No	**Date**	**Status**	**Revision Details**	**Originator**	**Verifier**	**Approver**
A	1/10/2015	Final	AGL, Project ER	First Solar	TG	ML
This document is not approved for use unless signed above by the Approver						

CONTENTS

APPENDICIES

FIGURES

TABLES

1. PURPOSE

This Incident Management Protocol for the Nyngan PV Power Station and associated access tracks has been prepared to meet the requirements of Condition C8 of the Nyngan Solar PV Power Station Development Consent (SSD-5355) which states:

> *C8. The Applicant shall notify, at the earliest opportunity, the Director General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the development the Applicant shall notify the Director-General and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant shall provide the Director-General and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.*

2. SCOPE

2.1 Overview

As required by Condition C8 of the Development Consent (SSD-5355) for the Nyngan Solar PV Power Station, First Solar (Australia) Pty Ltd (First Solar) has developed the following Incident

Management Protocol for the development as it relates to the activities of First Solar. Specifically this Incident Management Protocol relates to the operations stage of the power station and associated access tracks.

2.2 Nyngan Solar PV Power Station Development

The Nyngan Solar PV Power Station consists of a 102MW solar PV power station located approximately 10 km west of Nyngan. The solar plant occupies approximately 300 hectares of land to the north of the Barrier Highway.

First Solar Australia Pty ltd have been engaged by AGL to provide engineering. Procurement and construction (EPC) and O&M services. The Nyngan Solar PV Power Station utilises First Solar's advanced cadmium telluride (CdTe) thin film photovoltaic modules. The Solar modules generate electricity with no air emissions, no waste production, no water use and have one of the smallest carbon footprints of any current PV technology. Over 7,000MW of First Solar PV modules have been installed worldwide, including at many of the world's largest solar PV plants, since beginning commercial production in 2002. First Solar has been actively involved in the Australian market since mid-2008.

The Nyngan Solar PV Power station will generate an estimated 233,000 megawatt (MWh) of electricity annually.

2.3 Notification Reporting Requirements

The development Consent identifies incident based notification to regulators with respect to the following Conditions and Mitigation Measures:

Condition	Trigger	Regulator
B30	Unexpected Aboriginal object found	NSW Office of Environment and Heritage (OEH) Registered Aboriginal stakeholders
MM24	Human skeletal remains unearthed	NSW Police NSW Office of Environment and Heritage (OEH)
B31 and MM59	Unexpected Heritage object found	NSW Office of Environment and Heritage (OEH)
C8	Incident that has caused, or threatens to cause, material harm to the environment	Director-General and "any other relevant agencies"

Table 2.1 - Conditions and Mitigation Measures

Not all environmental events trigger notification in accordance with condition C8 of the Development Consent but rather are captured as environmental hazards. This is discussed further in the following section.

3. ACTIONS

3.1 Definition of an Incident

In accordance with Condition C8 of the Development Consent, and Environmental incident is required to be notified at the earliest opportunity to the Director General and any relevant agencies where the incident has caused, or threatened to cause material harm to the environment. A definition of an incident is a set of circumstances that:

- Causes or threatens to cause material harm to the environment; and/or
- Breaches or exceeds the limits or performance measures/criteria in this consent.

This is the definition used by the Department of Planning and Environment in the model Consent Conditions for energy projects in NSW.

3.2 Roles and Responsibilities

- The Applicant, as defined by the Development Consent for the Nyngan Solar PV Power Station, is the project owner AGL. The Applicant (AGL) shall be responsible for all notification to the Director-General and other relevant agencies.
- First Solar will be responsible for reporting incidents to the AGL Project Manager in accordance with this Incident Management Protocol in Section 3.3 so that the Applicant can fulfil their obligation under the development consent.
- First Solar will work with the Applicant with regards to incident reporting and any remedial action works as required.

Environmental incidents that do not cause, or threaten to cause, material harm to the environment will be managed onsite by the Site Supervisor and support from the First Solar HSW Team (as required). Incident reporting for these incidents will be in accordance with Section 3.4.

3.3 Environmental Events (Hazards)

Where an environmental events occurs on site that does not trigger the definition of environmental harm, then this event will be managed as a hazard using the First Solar Safety Corrective Action Register (SCAR) or as an Environmental Incident.

This is shown in the flow chart in Section 3.4.

Site hazards, including environmental, health and safety hazards, are reported using Hazard Report Form APP-SMP-20A (Appendix H). Environmental incidents are recorded and investigated using Form APP-SMP-22B (Appendix U)

3.4 Environmental Incidents Hazards Process

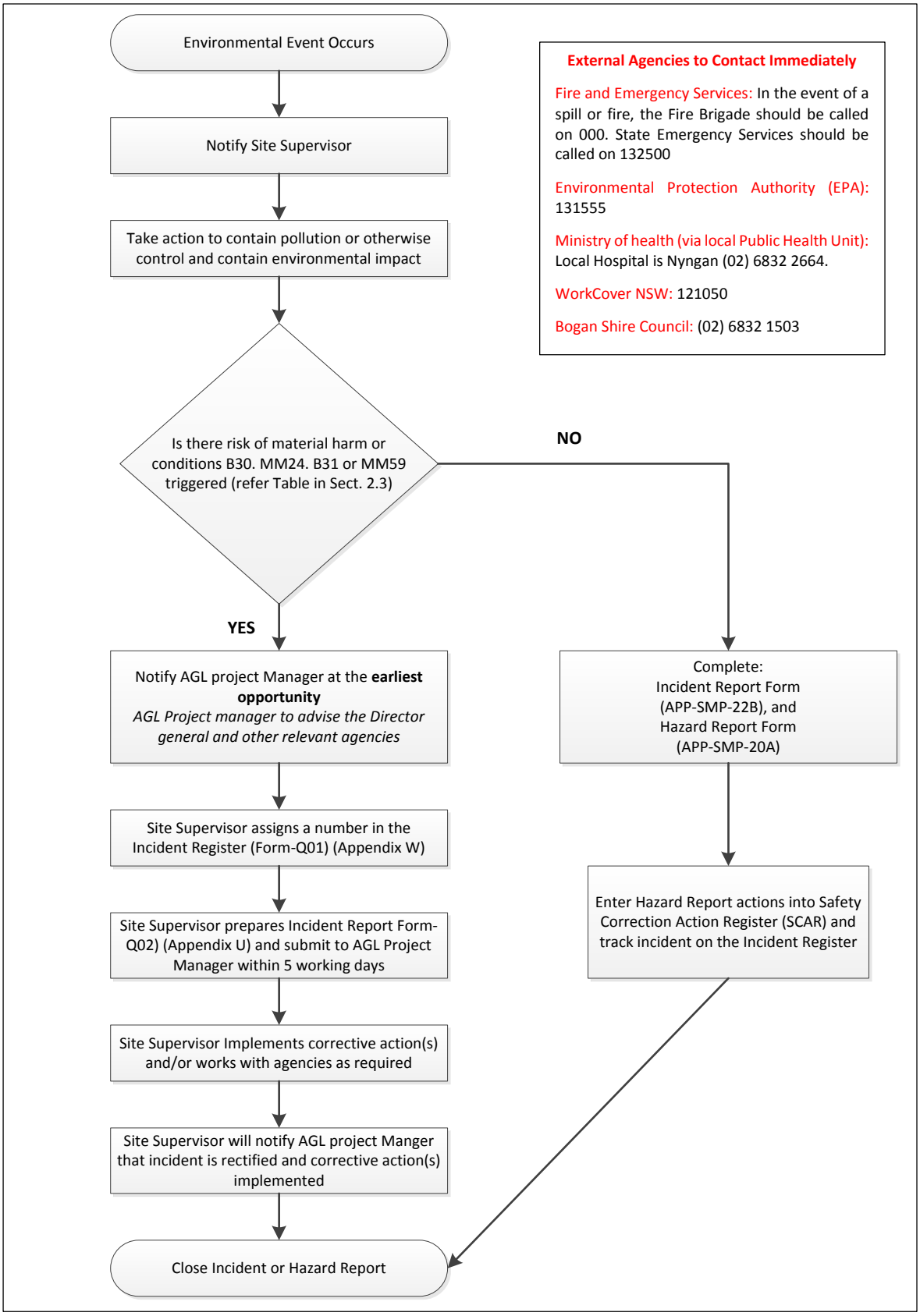


Figure 3.1 - Environmental Incidents Hazards Process

3.5 Emergency Environmental Incident

The Site Supervisor will:

- Be based at the Nyngan Solar PV Power Station site during the operational stage if the project and will have the authority to stop or direct work in the event of an environmental emergency.
- Be contactable on site via UHF or mobile phone. Additionally, the Site Supervisor will have access to a site vehicle and spill response equipment to allow a rapid response to environmental incidents.

3.6 Incident Report

The Site Supervisor will:

- Assign a sequential number to each incident and recorded on the Incident Register (Form-Q01 attached).
- Prepare an Incident Report using (Appendix U). Additional pages/reports will be attached to the Incident Report as required.

4. RESPONSIBILITIES

The responsibilities below relate to environmental incidents that trigger the Incident Reporting requirements set out in Condition C8.

AGL Project Manager

- Advising the Director General and other relevant agencies of an environmental incident
- Working with the Director General and other agencies as required
- Working with First Solar as required to resolve environmental incidents
- Advising the Director-General and other relevant agencies when incident is resolved.

First Solar Site Supervisor

- Advising the AGL Project manager of an environmental incident at the earliest opportunity
- Working with the AGL Project manager and First Solar Environmental Specialist as required to resolve incidents
- Directing corrective action if required.

Construction Personnel, Contractors and Sub-contractors

- Completion of Worker Environmental Awareness and Compliance Training
- Immediate onsite containment of spills as far as practicable
- Referring all incidents to the Site Supervisor.

5. RECORDS

- *Worker Environmental Awareness and Compliance Training* within the EHS Site Induction (Appendix E)
- *Hazard Report Form APP-SMP-20A* (Appendix H)
- *Incident Report Form* (Appendix U)
- *Incident Register Form-Q01* (Appendix W)

Appendix V – Hazardous and Dangerous Goods Risk Assessment (From APP-HCP-09A), Register, and Safety Data Sheet for SF6

APP – HCP-09A – HAZARD CHEMICALS & DANGEROUS GOODS RISK ASSESSMENT

Fill out this form for each substance or dangerous good. File the completed assessment with the item's Safety Data Sheet (SDS). Make sure the assessment and SDS is available at each location where the item is stored and/or used.

1 General information

Item name: _____ Risk assessment no.: _____

Form: ☐ Solid ☐ Liquid ☐ Gas ☐ Dust ☐ Steam Container size: _____

Site: Nyngan Storage quantity: _____

Use: O&M Location: _____

_____ Date assessed: _____

_____ Assessment team: _____
List names and roles

_____ _____

_____ Review details: _____
List name /date

2 Classification

Tick whether the item is classed as a dangerous good and/or hazardous chemical.

2a ☐ Dangerous good (DG) See Note1 ☐ Hazardous chemical (HC) ☐ Neither
(Complete all Sections) *(Complete all Sections)* *(Complete Sections 3, 4, 6 & 7 only)*

Note 1: Combustible C1 classed goods are also to be regarded as Dangerous Goods

Write the packing group and class if the product is a DANGEROUS GOOD

Packing group *(Circle one)*: I II III Class: _____ Subsidiary risk: _____

2b Information source: ☐ SDS ☐ Label ☐ Australian Standard _____ ☐ Other _____

3 Hazard identification

Write the hazard information from the label/SDS, e.g. extremely flammable, irritating to skin, may cause cancer.

4 Handling and storage

Write or summarise the handling and storage requirements that are on the label/SDS

4a Handling procedures

Use gloves; Avoid contact with skin; Wear suitable protective clothing including safety goggles or glasses;

Do not breathe any vapours, open in a ventilated area;

Keep waste containers separate and contact Environmental Lead regarding specific disposal requirements; Avoid spillage of product

4b Storage requirements

Keep chemical in sea container kept with like substances;

Chemical container not to be left in vehicle or open area when not in use

5 Risk assessment (required for Dangerous Goods and Hazardous Chemicals only)

5a Is the substance used, emitted or released into the workplace, or is there a likelihood of a spill or leak occurring:

☐ Yes *Complete all Sections*

☐ No *If it's a DG - go to Section 5e. If it's not a DG, go to Section 7b and choose Conclusion 1 - Risks not significant*

5b Exposure route: ☐ Inhalation ☐ Ingestion ☐ Skin contact ☐ Injection ☐ Eye contact

Have employees experienced symptoms of exposure or reported health effects? ☐ Yes (specify) ☐ No

5c Look at the work process, location of workers, and consider all persons with the potential for exposure:

	Hazardous? Yes	No
Is there evidence of contamination?	☐	☐
• Are dust or fumes visible in the air or on surfaces?	☐	☐
• Are substances visible on a person's skin or clothing?	☐	☐
• Are there visible leaks, spills or residue?	☐	☐
• Other _____	☐	☐
Is there direct contact with the substance?	☐	☐
Is there a potential for splashes?	☐	☐

How often are users exposed to the substance? ☐ Intermittent ☐ Continuous

Estimate the exposure time to the substance per affected person.

Write frequency x time each period. e.g. 1 x 30 min per day, 1 day per week

___x_____ Per day ___x_____ Per week ___x_____ Per month ___x_____ Per year

5d Concentration used:

	Yes	No
Does the user dilute the substance?	☐	☐
Are the health effects stated differently for diluted or undiluted use?	☐	☐

If YES, what are the health statements for:

Diluted: NA

Undiluted: Only used undiluted

5e Is health monitoring / surveillance required? ☐ Yes ☒ No ☐ Don't know

Health monitoring / surveillance is required if the degree of exposure is high or the substance is listed in SMP 14 – Health Exposure and Monitoring. Refer also to Part 7.1, Division 6 and Schedule 14 of the WHS Regulations, 2011.

If the answer to questions 7e or 7f is YES or DON'T KNOW, contact the HSE Manager or an Occupational Hygienist for assistance, or to discuss monitoring or health monitoring / surveillance.

5f Is air monitoring required? ☐ Yes ☒ No ☐ Don't know

If the degree of exposure is high and the existing control measures are inadequate, then it is likely that air monitoring is required.

5 Risk assessment (required for Dangerous Goods and Hazardous Chemicals only)

5g **Dangerous goods only**
List the maximum quantity of dangerous goods that will be stored: _____

Specify below the class of this quantity in relation to placarding and manifest requirements

☒	Minor	*Store in accordance with instructions on label/SDS. Go to Section 5f*
☐	Placard	*Further risk assessment with Subject Matter Experts is required. Contact the Project HSE Manager for assistance*
☐	Manifest	*Further risk assessment with Subject Matter Experts is required. Contact the Project HSE Manager for assistance*

5e **Are there additional external hazards that could contribute to risk:**	**Yes**	**No**
Potential for failure of containment leading to spillage or leakage	☐	☒
Fires and explosions resulting from the nature of the goods	☐	☒
Incompatibility of goods	☐	☒
Plant used with or near goods (e.g. heat or ignition sources)	☐	☒
Generation of hazardous atmospheres (e.g. flammable atmospheres and risk of explosion) or atmospheric contamination (e.g. risk of toxicity)	☐	☒
Manufacturing processes, including temperatures and pressure goods are subject to and changes of chemical state	☐	☒
Confined or enclosed spaces risks	☐	☒
Other (Details):	☐	☐

6 Existing control measures

Which of the following control measures are used?

	Specify the control type or write NA if not applicable
☒ Adequate natural ventilation/general ventilation systems	Open ventilation
☐ Specific local ventilation/extraction systems	
☒ Work practices ensure safe handling	Considered as a risk in work process
☒ Workers trained in the procedures for proper use	
☒ Appropriate PPE available and used	
☐ Facilities for changing and washing	
☒ Good housekeeping practices	Specified in JHAs
☒ Substances/goods stored in accordance with requirements	
☒ Waste disposed of properly	
☐ Emergency procedures in place and relevant to the item	
☒ Emergency equipment *e.g. eye wash, fire extinguishers*	
☒ Incompatible substances/goods segregated	
☐ Placards placed at each storage area and the site boundary	
☐ Ignition sources isolated from all flammable goods stores	
☒ Bulk containers and storage areas bunded to contain spills	
☐ Other: _____	

6 Existing control measures

7 Evaluation and conclusions

7a **Evaluate the risk**. *Use SDS and the answers from Section 5 to evaluate the risk*:

	Low	High	Don't know
Severity of hazard	☒	☐	☐
Degree of exposure	☒	☐	☐

Risk Ranking with existing controls: *Based on the above considerations use the risk matrix to rank the risk*:

Consequence: _____ Likelihood/ frequency: _____ Risk ranking: _____

Are current control measures adequate? ☒ Yes ☐ No

7b What is the conclusion about risks?

- ☒ Conclusion 1 Risks not significant
- ☐ Conclusion 2 Risks significant but controlled effectively
- ☐ Conclusion 3 Risks significant and controls inadequate *(NB. Consider stopping process; seek further advice)*
- ☐ Conclusion 4 Uncertain about risks

ACTION: *Conclusions 3 and 4 require further action. Complete a Corrective Action Request in INTELEX and implement in accordance with SMP 24 – Corrective Action Management*.

7c Comments *Please provide any comments about the assessment.*

7d If risk is Significant can the substance be:

- ☐ Eliminated
- ☐ Substituted (using a less hazardous substance/good)
- ☐ Isolated *e.g. from persons at risk, from other dangerous goods, from ignition sources*
- ☐ Engineered out *e.g. local extraction systems*
- ☐ Controlled by administrative means *e.g. restricted use, training, SOP / JHA developed*
- ☐ Controlled by using Personal Protective Equipment

Actions resulting from assessment results

- ☒ No further action required
- ☐ Expert help required (e.g. Occupational Hygienist)
- ☐ Additional control measures required
- ☐ Induction and/or other training required
- ☐ Requires ongoing monitoring
- ☐ Requires health monitoring
- ☐ Emergency procedures/first aid procedures required

7 Evaluation and conclusions

7e Assessors' details

Name _____ Position _____ Date _____

Name _____ Position _____ Date _____

Assessors must forward the completed Risk Assessment form and SDS, to the Responsible Manager for review and approval.

7f Manager approval

Name _____ Position _____ Date _____

The original Risk Assessment and SDS must be kept with the Dangerous Goods and Hazardous Chemicals Register.

Hazardous Chemicals Register

PROJECT NAME: .....

PRODUCT	MANUFACTURER OR SUPPLIER	APPROXIMATE QUANTITY	USER ON SITE (Name of Employer or Self Employer Person)	SAFETY DATA SHEET PROVIDED Yes / No

SAFETY DATA SHEET

Sulfur Hexafluoride

Section 1. Identification

GHS product identifier : Sulfur Hexafluoride

Chemical name : sulphur hexafluoride

Other means of identification : Sulfur fluoride (SF6), (OC-6-11)-; Sulfur fluoride (SF6); Sulfur hexafluoride; Sulfur fluoride

Product use : Synthetic/Analytical chemistry.

Synonym : Sulfur fluoride (SF6), (OC-6-11)-; Sulfur fluoride (SF6); Sulfur hexafluoride; Sulfur fluoride

SDS # : 001048

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Emergency telephone number (with hours of operation) : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.

Prevention : Use and store only outdoors or in a well ventilated place.

Response : Not applicable.

Storage : Protect from sunlight. Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : sulphur hexafluoride

Other means of identification : Sulfur fluoride (SF6), (OC-6-11)-; Sulfur fluoride (SF6); Sulfur hexafluoride; Sulfur fluoride

CAS number/other identifiers

CAS number : 2551-62-4

Product code : 001048

Ingredient name	%	CAS number
Sulfur hexafluoride	100	2551-62-4

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Section 4. First aid measures

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
sulfur oxides
halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Sulfur hexafluoride	**OSHA PEL Z2 (United States, 11/2006).** TWA: 2.5 mg/m³ 8 hours. Form: Dust **ACGIH TLV (United States, 3/2012).** TWA: 5970 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **NIOSH REL (United States, 1/2013).** TWA: 6000 mg/m³ 10 hours. TWA: 1000 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 6000 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 6000 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [NOTE: SHIPPED AS A LIQUEFIED COMPRESSED GAS. CONDENSES DIRECTLY TO A SOLID UPON COOLING.]

Color : Colorless.

Molecular weight : 146.06 g/mole

Molecular formula : F6-S

Melting/freezing point : -50.8°C (-59.4°F)

Critical temperature : 45.5°C (113.9°F)

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Flash point : [Product does not sustain combustion.]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : 320 (psig)

Vapor density : 5 (Air = 1)

Specific Volume (ft^3/lb) : 2.5994

Gas Density (lb/ft^3) : 0.3847

Relative density : Not applicable.

Solubility : Not available.

Section 9. Physical and chemical properties

Solubility in water : 0.031 g/l

Partition coefficient: n-octanol/water : 1.68

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Sulfur hexafluoride	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Section 11. Toxicological information

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : No known significant effects or critical hazards.

Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 11. Toxicological information

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Sulfur hexafluoride	1.68	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1080	UN1080	UN1080	UN1080	UN1080
UN proper shipping name	SULFUR HEXAFLUORIDE	SULFUR HEXAFLUORIDE; OR SULPHUR HEXAFLUORIDE	SULFUR HEXAFLUORIDE; OR SULPHUR HEXAFLUORIDE	SULPHUR HEXAFLUORIDE	SULPHUR HEXAFLUORIDE
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 
Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.

Section 14. Transport information

Additional information	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 75 kg **Cargo aircraft** Quantity limitation: 150 kg	**Explosive Limit and Limited Quantity Index** 0.125 **Passenger Carrying Road or Rail Index** 75	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 75 kg **Cargo Aircraft Only** Quantity limitation: 150 kg

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Sudden release of pressure

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Sulfur hexafluoride	100	No.	Yes.	No.	No.	No.

State regulations

Section 15. Regulatory information

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

Canada inventory : This material is listed or exempted.

International regulations

International lists : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

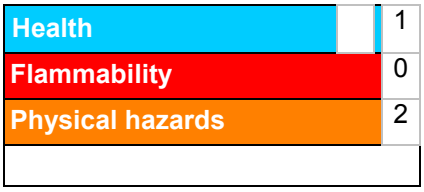
WHMIS (Canada) : Class A: Compressed gas.

CEPA Toxic substances: This material is listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is not listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class A: Compressed gas.

Hazardous Material Information System (U.S.A.)

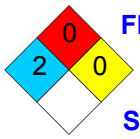


Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Section 16. Other information



Flammability

Health

Instability/Reactivity

Special

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing : 10/16/2014.

Date of issue/Date of revision : 10/16/2014.

Date of previous issue : 10/9/2014.

Version : 0.02

Key to abbreviations :
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United NationsACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
CAS – Chemical Abstract Services
CEPA – Canadian Environmental Protection Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA)
CFR – United States Code of Federal Regulations
CPR – Controlled Products Regulations
DSL – Domestic Substances List
GWP – Global Warming Potential
IARC – International Agency for Research on Cancer
ICAO – International Civil Aviation Organisation
Inh – Inhalation
LC – Lethal concentration
LD – Lethal dosage
NDSL – Non-Domestic Substances List
NIOSH – National Institute for Occupational Safety and Health
TDG – Canadian Transportation of Dangerous Goods Act and Regulations
TLV – Threshold Limit Value
TSCA – Toxic Substances Control Act
WEEL – Workplace Environmental Exposure Level
WHMIS – Canadian Workplace Hazardous Material Information System

References : Not available.

Indicates information that has changed from previously issued version.

Section 16. Other information

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Appendix W – Bushfire Management Plan, Hot Works Permit, RFS Fire Management Site Plan and Dangerous Goods Manifest

Bushfire Management Plan - O&M Stage, Nyngan Solar Plant



First Solar®

Table of Contents

Document Control

Doc Rev	Date	Reason	Issued by	Review		Review	
A	1/10/2015	Issued for FS review	First Solar	TG		ML	

1 Purpose

This Bush Fire Management Plan for the Nyngan Solar PV Power Station has been prepared to meet applicable requirements of:

- Development Consent (SSD-5355)
  - Condition B3
  - Condition B4 , C4
- Nyngan Solar Plan Submissions Report (NGH Environmental, June 2013)
  - Mitigation Measure 58

2 Scope

2.1 Overview

As required by the Development Consent (SSD-5355) for the Nyngan Solar PV Power Station, First Solar (Australia) Pty Ltd (First Solar) has developed the following Bush Fire Management Plan for the development as it relates to the activities of First Solar. Specifically this Bush Fire Management Plan relates to the Operations Phase of the power station and associated power station access tracks.

The overall approach First Solar will adopt in relation to bush fire is as follows:

- Avoidance and control of potential ignition risks in accordance with the *Bushfire Management Plan*
- Extinguishment of fires where practicable and safe to do so using onsite fire extinguishers
- Safe evacuation from site in the event of a fire
- Dial 000 in the event of uncontrolled fire
- Reliance on the NSW Rural Fire Service (RFS) to manage any uncontrolled fires on site

The First Solar *Bush Fire Management Plan* should be read in conjunction with the First Solar *Emergency Response Plan*.

2.2 Objectives of the Bush Fire Management Plan

The objectives of this Bush Fire Management Plan are to:

- Define appropriate measures and processes to minimise bushfire related risks during the operation of the Nyngan Solar PV Power Station.
- Confirm the intent to continue to engage with the Rural Fire Service (RFS) in the implementation of this Management Plan as the Nyngan Solar PV Power Station progresses operations
- Provide a monitoring, auditing and reporting framework to ensure the effectiveness of the bush fire controls implemented.

.

2.3 Nyngan Solar PV Power Station Development

The Nyngan Solar PV Power Station will consist of a 102MW solar PV power station located approximately 10km west of Nyngan. The solar plant will occupy approximately 300 hectares of land to the north of the Barrier Highway.

First Solar (Australia) Pty Ltd have been engaged by AGL to provide engineering, procurement, construction (EPC) and O&M services. The Nyngan Solar PV Power Station will utilise First Solar's cadmium telluride (CdTe) thin film photovoltaic modules. The solar modules generate electricity with no air emissions, no waste production, no water use and have one of the smallest carbon footprints of any current PV technology. Over 7,000MW of First Solar PV modules have been installed worldwide, including at many of the world's largest solar PV plants, since beginning commercial production in 2002. First Solar has been actively involved in the Australian market since mid-2008.

Once constructed the Nyngan Solar PV Power Station will generate an estimated 233,000 megawatt hours (MWh) of electricity annually.

2.4 Relevant Approval Provisions

The approval provisions for the Nyngan Solar PV Power Station relevant to the Bush Fire Management Plan are as follows:

Condition B3 of the Nyngan Development Consent states:

> *B3. The applicant shall ensure that all development components on site are designed, constructed and operated to minimise ignition risks, provide for asset protection consistent with relevant NSW Rural Fire Service (RFS) design guidelines (Planning for Bushfire Protection 2006 and Standards for Asset Protection, Undated) and provide for*

necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.

Condition B4 of the Development Consent states:

B4. Throughout the operational life of the development, the Applicant shall regularly consult with the local RFS to ensure its familiarity with the development, including the construction timetable and the final location of all infrastructures on the site. The Applicant shall comply with any reasonable request of the local RFS to reduce the risks of bushfire and to enable fast access in emergencies.

Mitigation Measure 58 states:

58 Develop a Bush Fire Management Plan with input from the RFS to include but no be limited to:

- *Management of activities with a risk of fire ignition.*
- *Management of fuel loads onsite.*
- *Storage and maintenance of fire fighting equipment, including siting and provision of adequate water supplies for bush fire suppression.*
- *The below requirements of Planning for Bush Fire Protection 2006 –*
  - *Identifying asset protection zones.*
  - *Providing adequate egress/access to the site (s4.1.3).*
  - *Emergency evacuation procedures (s4.2.7).*
- *Operational procedures relating to mitigation and suppression of bush fire relevant to the solar plant.*
- *Post-fire clean up procedures, including the need for sampling for emissions of cadmium and lead, where appropriate.*

Consent Condition C4 also requires that a bushfire management plan be in place during operations.

2.5 EIS Context

2.5.1 Overview

The local bush fire season in the Nyngan area generally occurs annually between October and March. The predominate weather conditions through the fire season are north-westerly winds with high daytime temperatures and low relative humidity.

The North West Bush Fire Risk Management Plan identifies that the main ignition sources for bush fires include electrical storms, lightening, ignition from farming and arson.

The nearest Rural Fire Service (RFS) Station is located in Nyngan township (65 Cobar Street) approximately 10km from the site.

2.5.2 Operations Phase Bush Fire Risk

Activities associated with project operations that may cause or increase the risk of bush fire include:

- Smoking and careless disposal of cigarettes on site
- Site maintenance activities such as mowing, slashing and using other petrol powered tools
- Welding and soldering activities
- Operating a petrol, LPG or diesel powered motor vehicle over land containing combustible material
- Operating plant fitted with power hydraulics on land containing combustible material.

Considering the sparse vegetation cover over the power station site, it is considered unlikely that project would pose a significant bush fire risk.

2.6 Risk Controls

The following table identifies risk controls for each of the Construction Risk bush fire risks identified in Section 2.5.2.

Risk:	Control
Smoking and careless disposal of cigarettes on site	Designated smoking areas LyŘdzŐűł2y
Site maintenance activities such as mowing, slashing and using other petrol powered tools	Checking fire danger rating (prior to work) - choose low humidity, low temperature days
Welding and soldering activities	Welding and soldering activities to be undertaken away from possible fuel loads, e.g. vegetative and waste Controls as per First Solar Project Site Safety Plan.
Operating a petrol, LPG or diesel powered motor vehicle over land containing combustible material	Works to be minimised as far as practicable Vehicles to be restricted to formed access tracks

	Battery powered machinery to be used if possible Maintenance of machinery - keep plant prestarts
Operating plant fitted with power hydraulics on land containing combustible material	Works to be minimised as far as practicable Maintenance of machinery - keep plant prestarts

It is noted that the power station site vegetative cover is expected to consist of grasses and lucerne. The overall risk of bush fire onsite from the above identified risks is considered to be low and highly manageable.

2.7 Legislative Requirements

The following is an indicative, but not exclusive, list of legislative requirements relevant to the *Bush Fire Management Plan*:

- *AS1940 The Storage and Handling of Flammable and Combustible Liquids*
- *AS3780 The Storage and Handling of Corrosive Substances*
- *AS/NZ4452 The Storage and Handling of Toxic Substances*
- *Rural Fires Act 1997*
- *Rural Fires Regulation 2008*
- *Storage and Handling Liquids: Environmental Protection Participants Manual, 2007*
- *Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management; Part B, Review of Best Proactive and Regulation, 2005*

3 Preventative Actions

3.1.1 Constantly Monitor and Advise Fire Danger Status

The fire danger status shall be obtained through the RFS website:

http://www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1109

The fire danger status will be communicated at the First Solar onsite sign-in register daily.

Nyngan is located in Zone 14 *"Upper Central West Plains"* on the NSW Rural Fire Service "*Total Fire Ban and Current Fire Danger Map*".

3.1.2 Adhere to Total Fire Ban rules

The *Rural Fires Regulation 2008* states:

> *A person must not, in connection with any agricultural, pastoral or other land use, drive or use in any grass, crop or stubble land any motorised machine unless:*
>
> - *the machine is constructed so that any heated areas will not come into contact with combustible matter, and*
> - *the machine is maintained in a good and serviceable condition so as to prevent the outbreak of fire.*
>
> *A person must not, in connection with any agricultural, pastoral or other land use:*
>
> - *drive or use in any grass, crop or stubble land, a motorised machine on which it is practicable to carry prescribed fire safety equipment, or*
> - *carry out welding operations or use explosives or an angle grinder or any other implement that is likely to generate sparks, unless the person carries on the machine, or has in the vicinity, prescribed fire safety equipment that is maintained in a serviceable condition.*

First Solar will implement appropriate controls with respect to machinery maintenance to ensure compliance with the above provision. Further detail regarding the specific controls are detailed in Section 3.1.6.

3.1.3 No Intentionally Lit Fires for Any Purpose

No fires will be intentionally lit within the Nyngan Solar PV Power Station site or in areas associated with the power station access tracks for any purpose.

3.1.4 Extinguish and/or Contain When Safe To Do So

Pursuant to the *Rural Fires Act 1997* (RFA, 1997):

- *It is the duty of the owner or occupier of land to take notified and practicable steps to prevent the occurrence of bush fires on, and to minimise the danger of the spread of bush fires on or from, that land;*
- *If a fire (not being a fire or part of a fire lit under the authority of this Act or any other Act) is burning on any land at any time during a bush fire danger period applicable to the land the occupier of the land must:*
  - *(a) immediately on becoming aware of the fire and whether the occupier has lit or caused the fire to be lit or not, take all possible steps to extinguish the fire, and*
  - *(b) if the occupier is unable without assistance to extinguish the fire and any practicable means of communication are available, inform or cause to be informed an appropriate officer of the existence and locality of the fire if it is practicable to do so without leaving the fire unattended.*

Any fire incident would be appropriately recorded in an Incident Report prepared in accordance with **CEMP-Q** *Incident Management Protocol*.

First Solar will have fire extinguisher equipment available In all onsite vehicles. The management and maintenance of this equipment will be undertaken in accordance with the First Solar Project Site Safety Plan.

First Solar will only utilise fire extinguishers for life safety evacuations or for putting out small fires where the operator of the fire extinguisher has been trained in it's use.

3.1.5 Storage of Fuel and Combustibles

During work hours fuels and combustible materials that present an ignition risk are to be stored and used in accordance with the manufacturer/suppliers recommendations, including the availability of fire-fighting equipment. Where applicable, First Solar will ensure that fuels and combustible materials that present an ignition risk are also stored in accordance with CEMP-V Dangerous Goods and Spill Response Plan and the relevant Australian Standard including:

- *AS1940 The Storage and Handling of Flammable and Combustible Liquids*
- *AS3780 The Storage and Handling of Corrosive Substances*
- *AS/NZ4452 The Storage and Handling of Toxic Substances*
- *Storage and Handling Liquids: Environmental Protection Participants Manual, 2007*
- *Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management; Part B, Review of Best Proactive and Regulation, 2005*

Upon the cessation of work for the day all portable fuels and like products must be returned to the main site compound and appropriately stored in the designated area (as far as practicable). This designated area will be sign posted "Fuel Storage Area" and appropriate controls such as fire-fighting equipment made available to the fuel storage area. The fuel storage area will be free of grass and other combustible material.

3.1.6 Specific Controls

The following measures would be adopted to minimise bush fire related risks throughout the Construction Phase for the Nyngan Solar PV Power Station and associated access tracks.

- Motorised equipment would not be driven in heavily vegetated / grassed areas unless that machine is constructed so that any heated areas do not come in contact with combustible materials.
- All machines and equipment would be maintained in a good and serviceable condition.
- All plant and equipment accessing the Nyngan Solar PV Power Station site, and activities that could generate sparks (i.e. welding and use of angle grinders), would require ready access to prescribed fire safety equipment (e.g. knapsack spray pump of 16L capacity filled with water, fire extinguisher (liquid type) of 9L capacity or dry powder type extinguisher of 0.9kg capacity).
- During construction, trailer mounted water tankers with fire fighting pumps and spray hoses would be available on site at all times.
- Throughout construction, the areas immediately around infrastructure would be managed to prevent the build-up of combustible materials.
- Waste will be removed from site in accordance with OEMP (6.3.5).

3.1.7 Inductions and Training

All construction personnel and contractors will be provided worker environmental awareness.

Part of this will be through the general site induction which will include a session on obligations to comply with the Bush Fire Management Plan and the need to understand and comply with responsibilities for minimising the potential for creating a bush fire risk onsite.

3.1.8 Inspections and Monitoring

Maintenance and ready access to all fire-fighting equipment is a critical element of bushfire risk management.

During the bushfire season access to and the operation of all fire fighting equipment will be checked on a weekly basis. Outside the bushfire season equipment will be inspected and checked on a monthly basis. Records of monthly inspections shall be maintained.

4 NSW Rural Fire Service (RFS)

4.1 Consultation

In accordance with Condition B4 of the Development Consent, as the construction schedule for the Nyngan Solar PV Power Station is refined and the construction effort progresses, First Solar will continue to consult with the NSW Rural Fire Service to ensure:

- Restrictions related to the prohibition and / or restriction of certain construction activities, at certain locations, in certain circumstances (e.g. periods of total fire bans) are clearly understood by all parties and adhered to.
- The specification of fire suppression equipment available on site, include tanker access and sources of water, are adequate.
- That a detailed and accurate site map is made available that specifies the location and quantities of all stored flammable material (e.g. fuels).
- That a suitable emergency evacuation plan is prepared and adequate training in the use of fire fighting equipment is provided.

First Solar acknowledges that the Minister's consent requires it to comply with any reasonable request of the local RFS.

The appropriate local RFS contact is the Zone Manager, North West Zone (contact details below):

Zone Manager

North West Zone

Inspector Greg Sim

Phone: 02 682 24422

Mobile: 0428 253 224

E-mail: greg.sim@rfs.nsw.gov.au

Please call 000 for all emergencies

4.2 Access

A set of gate keys will be provided to the NSW Rural Fire Service to enable access to the Nyngan Solar PV Power Station site as required. A final site plan, showing access points (and static water supply location – refer below) will be provided to Rural Fire Service on completion of detailed design for the Nyngan Solar PV Power Station and again post construction.

4.3 Emergency Evacuation

Emergency evacuation from the power station construction site will be undertaken in accordance with the First Solar Emergency Response Plan. All onsite personnel (including visitors) will be made aware of the emergency evacuation protocol.

First Solar will only utilise fire extinguishers for life safety evacuations or for putting out small fires where the operator of the fire extinguisher has been trained in it's use.

4.4 Static Watering Point

As required by Mitigation Measure 58, the following section sets out the location and availability of adequate water supplies for the RFS to undertake bush fire suppression.

1. The 1.2 mega litre existing farm dam located midway on the southern boundary of the Nyngan Solar PV Power Station will be retained to provide a static watering point for tanker access.
2. Figure 4 in the EHS O&M Manual shows the location of this dam and the location of other dams in the vicinity of the Nyngan site.
3. A bush fire water storage tank will also be present on site to provide an additional source of water to the Rural Fire Service.

4.5 Post Fire Clean Up Procedure

Mitigation Measure 58 (bullet point 6) requires the development of a post-clean up procedure for the Nyngan Solar PV Power Station, including the need for post fire sampling for emissions of cadmium and lead (where appropriate), to be included within the Bush Fire Management Plan.

As outlined in the CEMP, the construction of the Nyngan Solar PV Power Station will include the installation of First Solar's advanced cadmium telluride (CdTe) thin film photovoltaic (PV) modules. First Solar CdTe PV modules, unlike crystalline silicon PV modules which typically connect individual cells with lead based solder, have minimal lead content (<0.003% per module). In terms of post fire clean up and sampling, it is the determination of First Solar that the risk of onsite lead contamination posed by the CdTe modules is negligible.

With respect to emissions of cadmium, CdTe is a semiconductor compound with strong chemical bonding that leads to high chemical and thermal stability. Each First Solar CdTe PV module (dimensions 1.2m x 0.6m) contains less cadmium content than a C sized flashlight Ni-Cd battery. During the PV module manufacturing process, the CdTe is bound under high temperature to a sheet of glass by vapour transport deposition, coated with an industrial laminate material, and covered with a second sheet of glass, resulting in encapsulation of the semiconductor material.

The highest fire risk presented to solar PV power stations are from uncontrolled grass fires. For grass fires the flame resistance times in grass fuels is approximately 15 seconds and the fires burn at temperatures of approximately 800 to 1000°C. The likelihood of a grass fire exposing the CdTe modules to prolonged fire conditions or temperatures high enough to volatilise CdTe, which has a boiling point of 1,050°C, is considered to be very low. Further, experimental fire testing at temperatures ranging up to 1100 ˚C (well in excess of levels expected from a grass fire), indicates that PV module glass layers fuse together limiting the potential release of cadmium from the module to approximately 0.04% of the internal cadmium content. At the level cited, potential impacts from the release of cadmium in fire are well below health screening levels.

Noting the above, it is the determination of First Solar that post fire sampling for emissions of cadmium and lead will not be required on sites that utilise the First Solar CdTe PV modules, including the Nyngan Solar PV Power Station site.

The following post fire clean up procedure has been developed by First Solar to be employed in the event of an uncontrolled fire at the power station site during the Construction Phase:

1. Prior to re-entering the site, the First Solar HSE and Project Management Team (in consultation with the RFS) will undertake an hazard identification and risk assessment for site re-entry, including an assessment of any HSE risks that may be associated with:
    - Onsite fuel storage

- Onsite chemical storage
- Electrical infrastructure, including both power sources for ancillary buildings and power sources that may be under construction at the time of the fire

2. First Solar will wait for permission from the RFS prior to re-entering the site.

3. If required, risk controls identified during the hazard identification and risk assessment process will be implemented by First Solar.

4. An incident investigation will be undertaken by First Solar (in consultation with the RFS). Incident Management will be undertaken in accordance with the *Incident Management Protocol* (Section 7.7).

5. A post fire damage assessment will be undertaken by First Solar. This assessment will be used to inform the post fire cleanup process.

6. Where safe and practicable to do so, First Solar will salvage undamaged construction materials from the site for use during the continued construction of the power station.

7. Where construction materials cannot be salvaged, disposal opportunities will be explored by First Solar. In accordance with åŠÔűż2y˘c¢o¢p and Mitigation Measure 55, First Solar will explore all opportunities to reuse and recycle materials.

8. Disposal of damaged construction materials will be undertaken in accordance with the relevant waste classification and, where required, waste will be disposed of to an appropriately licenced waste facility.

9. Where required, specialist machinery (e.g. civil machinery) may be deployed to the site to remove damaged power station infrastructure.

10. Subject to the nature and extent of the suspected damage and the timing in relation to the construction schedule, First Solar may engage an independent structural engineer to undertake an onsite assessment of the structural adequacy (as required by Condition A6) of the undamaged sections of the power station development (where ancillary facilities and structures exist) to ensure that these sections continue to meet the relevant requirements of the BCA.

11. Where identified during the incident investigation process, First Solar will implement additional fire mitigation measures at the power station site.

12. First Solar (in consultation with AGL) will recommence the construction of the power station.

5 Responsibilities

Site Supervisor

- Completion of Worker Induction
- Responsible for consultation with the NSW Rural Fire Service prior to and during the construction process.
- Notifying the relevant authorities and AGL representative of any fire incident.
- Sign-off of Incident Report
- Advising personnel when maintenance works can recommence.
- Advising the First Solar Environmental Manager
- Involvement in post-fire clean up procedure

Maintenance Crew, Contractors and Sub-contractors

- Completion of Worker Induction
- Ensuring adequate fire-fighting equipment is available on-site and that relevant personnel have appropriate training in the safe use of this equipment.
- Notifying the Site Supervisor of any fire occurrence.
- Input to Incident Report (as required)
- Involvement in post-fire clean up procedure

6 Records

Incident Report **Form APP-SMP-22B** (Appendix U)

Worker Induction

Bushfire Emergency Management & Evacuation Plan (submitted to RFS in August 2015)

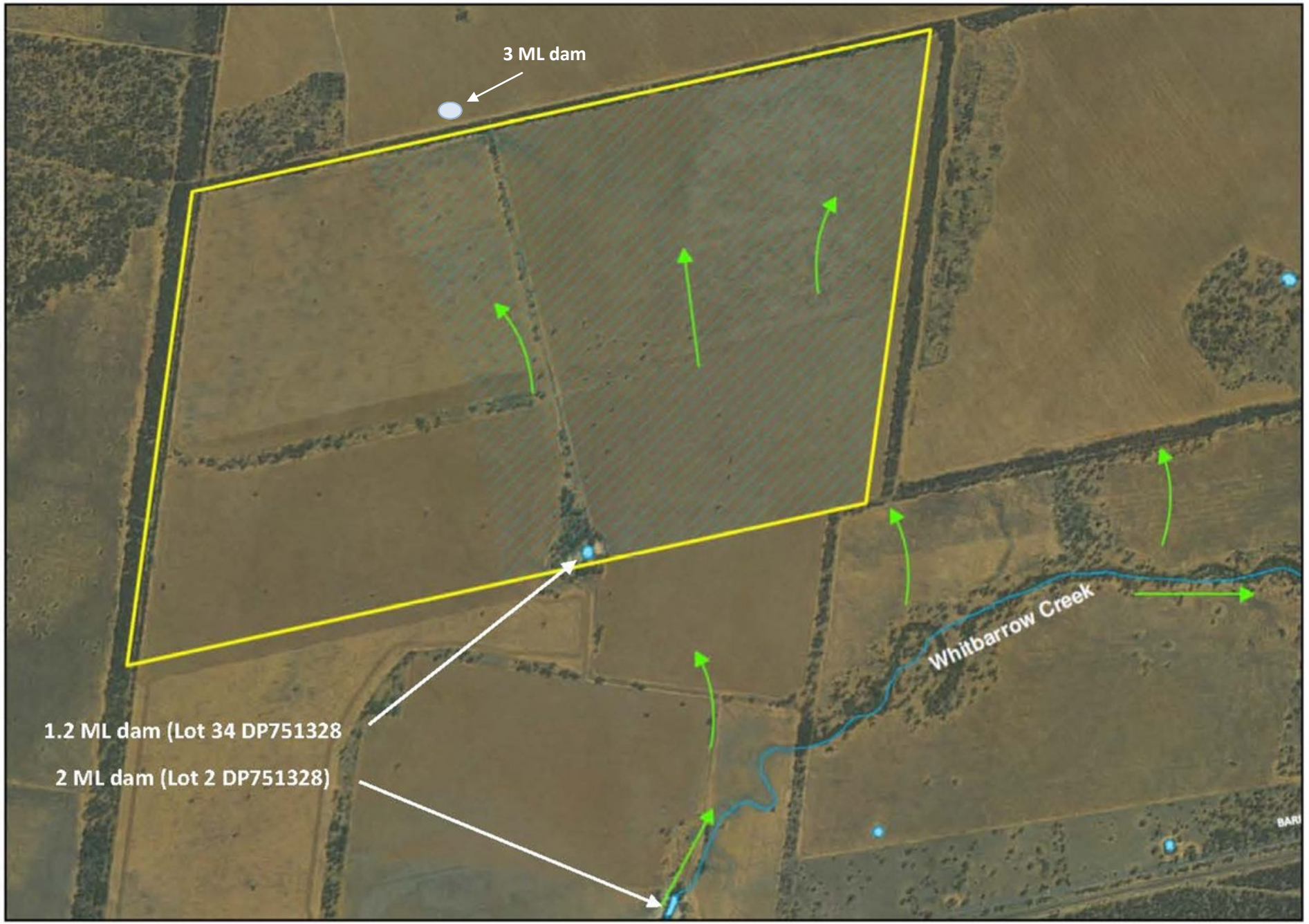


Figure-M01.01: Site Static Water Supply

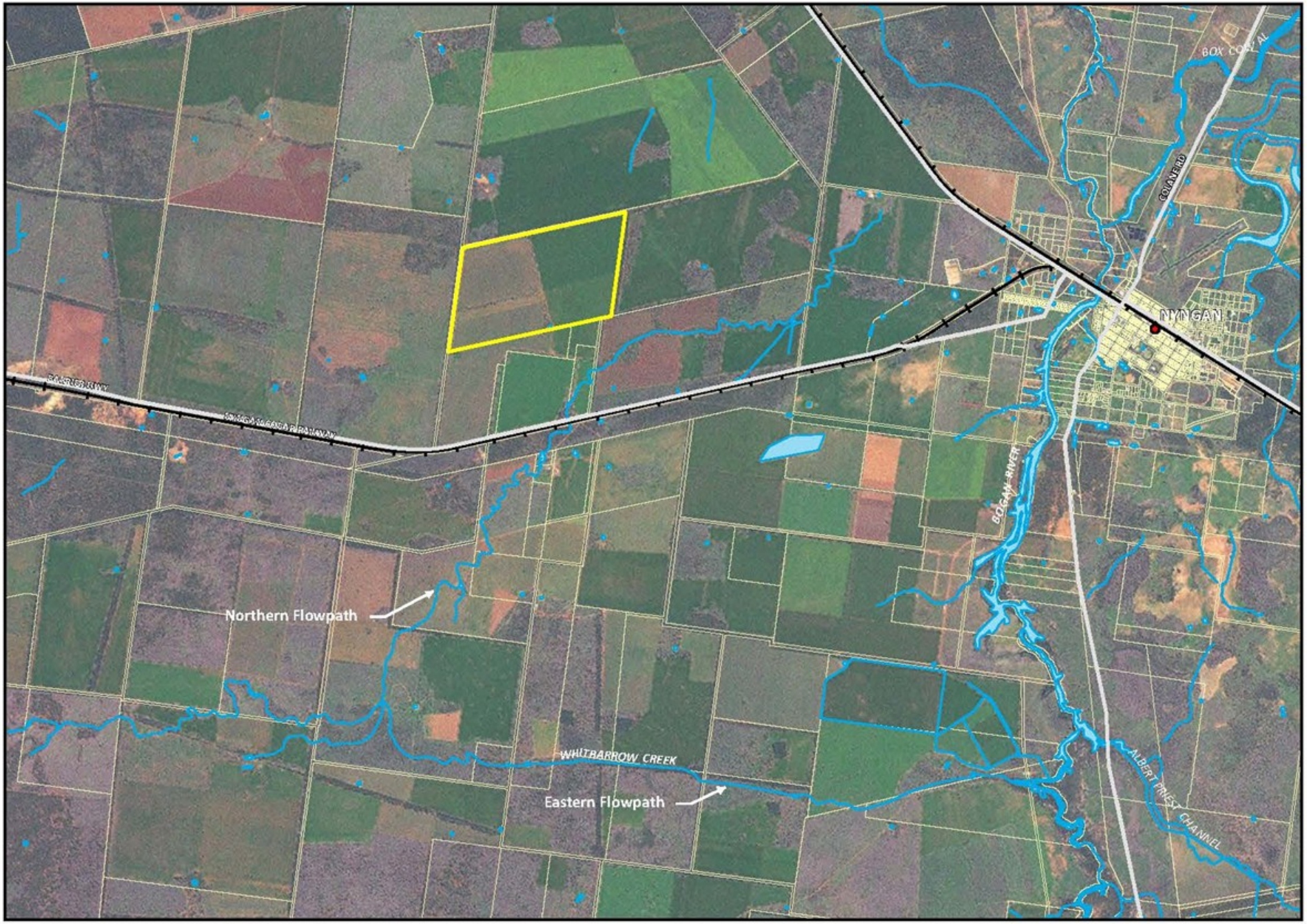


Figure-M02.01: Surrounding Static Water Supply

HOT WORK PERMIT

PERMIT IS TO BE ISSUED PRIOR TO DOING HOTWORK:

Eg, Welding, Oxy Acetylene Work, Grinding etc.

PART A: PERMIT DETAILS: (completed by Permit Acceptor and Permit Issuer)
Job description:
Job location:
Permit Commencement Date:
Permit Completion Date:
Subcontractor requiring work permit: SFL Name:
PART B: WORK CONTROL MEASURES: (completed by Permit Acceptor and Permit Issuer)
Examples: Appropriate type and suitable number of fire extinguishers available within 10m Dedicated fire watch in place (person watching work if required) SWMS and Emergency Response Plan in place and understood Flammable materials removed where possible Fire resistant protection blankets in place
Special Conditions/Instructions: 20 litres of water with quick pressure release (open end hose) Water soak hot works area prior to works Fire Watch to remain in place for 30 mins after completing hot works All hot works to cease at least 45mins before leaving site All equipment pre-start checks completed before commencing hot works Flashback safety valves installed on all gas lines at the gauges

FIRE WATCHER	Yes	☒	No	☐	If dedicated Fire Watch is required, checks to be carried during works and 30 minutes after completion of work		
Name of Fire Watcher	**Signature**				**Date**	**Time On (24 hr)**	**Time Off (24 hr)**
						:	:

PART C: PERMIT ISSUE (completed by Permit Issuer)							
I confirm that all work control measures made to ensure the safety of those working under this PTW are in place. The work area has been checked and it is safe for work to proceed under the conditions stated in this PTW.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:
PART D: PERMIT ACCEPTANCE (completed by Permit Acceptor)							
I understand and accept the conditions and precautions detailed above. I shall implement all controls and ensure all personnel have been instructed.							
Permit Acceptor:		Signature:		Date:	/ /	Time: (24 hr):	:
PART E: PERMIT CANCELLATION (completed by Permit Acceptor)							
I confirm that all work for which this PTW was issued has been completed, all safety devices and isolations have been removed and the workplace has been inspected and left in a clean and safe condition.							
Permit Acceptor:		Signature		Date:	/ /	Time (24 hr):	:
PART F: PERMIT CLOSURE (completed by Permit Issuer)							
I confirm that all work for which this PTW was issued has been completed and verify this PTW has been cancelled by the Permit Acceptor. All personal safety control precautions have been removed including all safety devices and isolations and the workplace has been inspected and left in a clean and safe condition.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

PART G: WORKER SIGN-ON			
Print Name	**Signature**	**Print Name**	**Signature**

BUSH FIRE EMERGENCY MANAGEMENT AND EVACUATION PLAN

Name of facility:

Nyngan Solar Farm (NSF)

Address

Barrier Hwy Nyngan

Lot 34, DP751328, Nyngan 2825, Australia

Prepared by:

Turlough Guerin

Authorised by:

Peter Bradfield

Date: 20 August 2015

TO BE REVIEWED ANNUALLY

Facility Details

This plan is for: Nyngan Solar Farm
Name of facility

and has been designed to assist management to protect life and property in the event of a bush fire.

This Plan outlines procedures for both **sheltering** (remaining on-site) and **evacuation** to enhance the protection of occupants from the threat of a bush fire.

The Primary Action to follow under normal bush fire conditions is to:

Shelter ☑ **Evacuate** ☐

Contact person: Peter Bradfield

Position / role: Site Supervisor/Manager

Phone number (BH): 0428 517 593 Phone number (AH): 0428 517 593

Type of facility: Power Station Number of buildings: 3

Number of employees: 3 Number of occupants: 3

Number of occupants with support needs: 0

Provide description of support needs:

No support needs.

Site Technicians are Brendan Wykes (0409 992 178) and Brett Jeffery (0419 520 125).

Roles & Responsibilities

The following outlines who has the responsibility of implementing the emergency procedures in the event of a bush fire.

Position	Name or person	Building / area of responsibility	Mobile phone number
Site Supervisor	Peter Bradfield	Site Office	0428 517 593
Site Supervisor	Peter Bradfield	Site Control Centre	0428 517 593
Site Supervisor	Peter Bradfield	PVIS	0428 517 593

Emergency Contacts

Name of organisation	Office / contact	Phone Number
NSW Rural Fire Service	Local Fire Control Centre	Mark Mulheron 0419 692 909
NSW Rural Fire Service	Bush Fire Information Line	1800 679 737 1800 NSW RFS
NSW Rural Fire Service	Website	www.rfs.nsw.gov.au
NSW Police Force	Nyngan	000
Local Hospital	Nyngan	02 6835 1700

SHELTERING PROCEDURES

Evaluation of the safety of employees and occupants has determined that it would be safer for ALL persons to shelter in a designated refuge.

The following are the designated refuges allocated within the premises.

Designated refuges

a. Site office

b. .....

c. .....

d. .....

Procedure for sheltering during a bush fire emergency

Trigger	Action
a. Site Supervisor/Site Representative assess fire	a. Wait in Site Office
b. Fire threatens people or power station assets	b. Move personnel to evacuation area
c.	c. .....
d.	d. .....

After the bush fire emergency

a. Return to Site Office

b. .....

c. .....

d. .....

EVACUATION PROCEDURES

Evaluation of the safety of employees and occupants has determined that it would be safer for ALL persons to evacuate to a designated refuge.

Designated assembly points

1. Main Plant Access Gate (SW Corner of site)
2. .....
3. .....
4. .....

Refuge (primary)

Name of venue (primary): Main Plant Access Gate (SW Corner of site)

Address of venue: Barrier Hwy Lot 34, DP751328, Nyngan 2825, Australia

Nearest cross-street: Barrier Hwy (10 km west of Nyngan Town Centre)

Map reference: 31.5667° S, 147.2000° E

Phone number: 0428 517 593, 0418 401 522, 0409 735 158

Transportation arrangements

Number of vehicles required: 1

Name of organisation providing transportation: Alternate Site Representative (Brett Jeffery/Brendan Wykes)

Contact phone number: 0419 520 125/0409 992 178

Time required to have transportation available: 15-30 minutes

Estimated travelling time to destination: 15 minutes

Refuge (alternate)

Name of venue (alternate): Not applicable

Address of venue: .....

Nearest cross-street: .....

Map reference: .....

Transportation arrangements

Number of vehicles required: Not applicable

Name of organisation providing transportation: .....

Contact phone number: .....

Time required to have transportation available: .....

Estimated travelling time to destination: .....

Before and at the commencement of the Bush Fire Danger Period, we will:

a. Ensure all site personnel are trained in bushfire prevention and management

b. Monitor growth in arrays and monitor firebreaks (monthly) slash if required

c. Check extinguishers in LVs (in date and contents not compacted) and all FFE is in good working order

d. Review training needs and engage RFS as required

Procedures for evacuation in the event of a bush fire

Trigger	Action
a. Fire reaching power station fenceline	a. Personnel move to Main Plant Access Gate
b. Fire impacting power station assets	b. Ring 000
c.	c. .....
d.	d. .....

After the bush fire event

a. Personnel to return to Site Office

b. Assess assets for fire damage

c. .....

d. .....

Attachments

- Occupant/employee listing
- Contact details for parents/guardians
- Site Layout of Premises

APPENDIX 1

Example Bush Fire Action Statements and triggers

The following are examples of some actions statements and when they should occur (triggers). You may identify additional statements and triggers relevant to your situation.

Before and at the commencement of the Bush Fire Danger Period:

- Ensure that the staff are prepared in accordance with the Bush Fire Emergency Management and Evacuation Plan.
- Ensure that all persons are informed of the evacuation/shelter-in-place procedures.
- Ensure that families are provided with a copy of the procedure "What to do if the centre is to be evacuated" upon arrival at the centre (for schools and child care centres etc).
- Ensure building and areas around buildings are prepared and maintained.
- Ensure any firefighting equipment (hoses etc.) is serviceable and available.
- Update contact details of staff and occupants.
- Contact and update emergency services with the premises' contact details.
- Contact refuges for potential use during a bush fire emergency.
- Contact transport suppliers for potential use during a bush fire emergency.

In the event of a bush fire in the surrounding area, occupants of the premises shall follow the procedure outlined below:

When aware of the bush fire in the local area:

- Consult the NSW RFS website, 1800 NSW RFS, smart phone applications and local firefighting resources for fire situation and updates.
- Inform staff and occupants of the fire situation.
- Ensure that the person in charge, ie. Chief Warden, has a mobile phone and is contactable.
- Advise the local emergency services that the centre is operating, and that it will need to be advised early in the event of an evacuation being necessary.
- Make arrangement for transportation (for evacuation).

In the event of an approaching bush fire threatening the premises within X hours, the primary action to evacuate/shelter will take place, staff and occupants of the premises shall follow the procedure outlined below:

- Designated Fire Warden will take control of the situation.
- Remain calm and explain to the occupants what is happening.
- Staff to ensure all doors and windows closed within the premises.
- Sheltering
- Move all persons to the designated refuge.
- Ensure all persons are accounted for (use listing of occupants and visitors register).
- The Fire Warden (or person responsible) is to advise the local emergency service (include phone number) that the centre is sheltering-in-place (include how many people and which building on site).
- After all the occupants have been relocated to refuge, nominated staff will commence contacting relevant families affected.
- Maintain situational awareness through radio, NSW RFS website, 1800 NSW RFS, smart phone applications and local firefighting resources.
- Two persons to make regular exterior visual inspection (wearing appropriate protection from bush fire) of the refuge for embers and extinguish where possible or call 000 for assistance.

Evacuation

- The Fire Warden (or person responsible) is to advise the local emergency service (include phone number) that the centre is being evacuated (include how many people and where they are going).

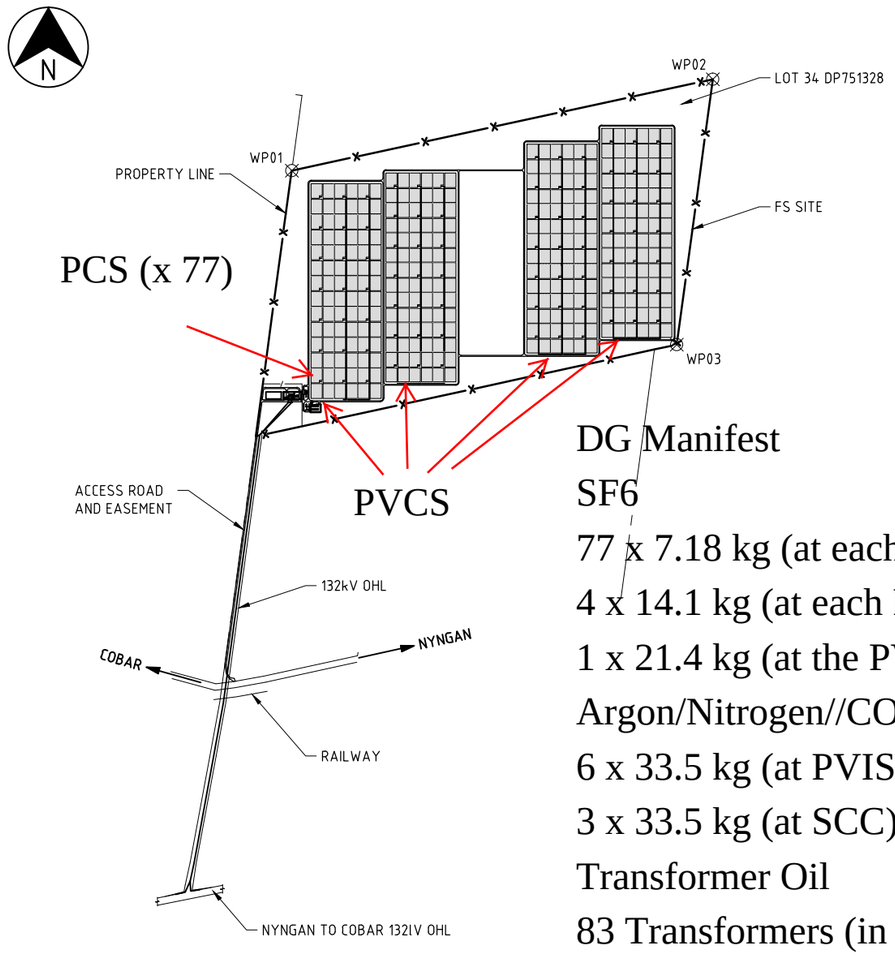
- Arrange for vehicles to meet at designated assembly point for pick up of persons.
- Contact refuge and inform them of pending arrival.
- Move all persons to the assembly point for evacuation.
- Ensure all persons are accounted for prior to departure (use listing of occupants).
- Ensure all site buildings have all doors and windows closed prior to leaving site.
- At refuge, move all persons inside and ensure all persons are accounted for and safe.
- The Fire Warden (or person responsible) to advise the local emergency service (include phone number) that the all persons have been evacuated and are accounted for and safe at the designated refuge.
- After all the occupants are accounted for and safe at the designated refuge nominated staff will commence contacting families affected.
- Maintain situational awareness through radio, NSW RFS website, 1800 NSW RFS, smart phone applications and local firefighting resources.

Forced evacuation – as a result of bush fire in the surrounding area and due to its severity, fire authorities require occupants to be evacuated to a refuge.

- Fire Warden (or person responsible) to liaise with the police/emergency service giving evacuation orders and provide them with the number of persons and any support needs that are to be considered for transportation (if no on-site transportation is available).
- Arrange for vehicles to meet at designated assembly point for pick up of persons.
- The Fire Warden (or person responsible) is to advise the local emergency service (include phone number) that the centre is evacuating due to police direction (include how many people and where they are going).
- Move all persons to the assembly point for evacuation
- Ensure all persons are accounted for prior to departure (use listing of occupants).
- At refuge, move all persons inside and ensure all persons are accounted for and safe.
- The Fire Warden (or person responsible) is to advise the local emergency service (include phone number) that the all persons have been evacuated and are accounted for and safe at the refuge.
- After all the occupants are accounted for and safe at the refuge, nominated staff will commence contacting relevant families affected.
- Maintain situational awareness through radio, NSW RFS website, 1800 NSW RFS, smart phone applications and local firefighting resources.

When the bush fire threat has passed and the area is deemed safe by emergency services:

- No person should re-enter any evacuated building until advised by the emergency service.
- The Fire Warden (or person responsible) to arrange the movement of occupants back to the site and or their separate accommodation.
- All occupants are to be accounted for on their return.
- Inform the police/emergency service of the return of persons to the premises.



PCS (x 77)

PVCS

DG Manifest

SF6

77 x 7.18 kg (at each PCS Unit)

4 x 14.1 kg (at each PVIS Unit)

1 x 21.4 kg (at the PVIS)

Argon/Nitrogen//CO2 - Fire Fighting Gas

6 x 33.5 kg (at PVIS)

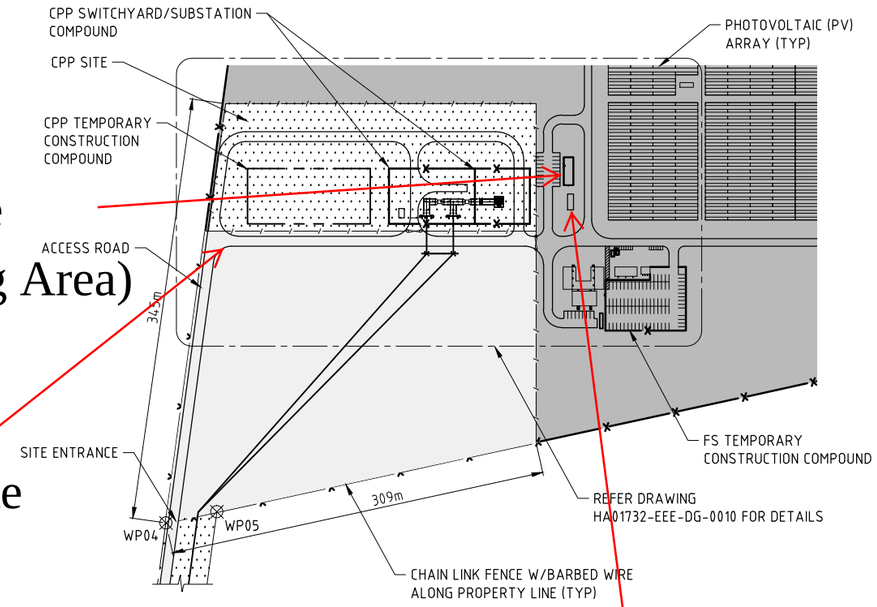
3 x 33.5 kg (at SCC)

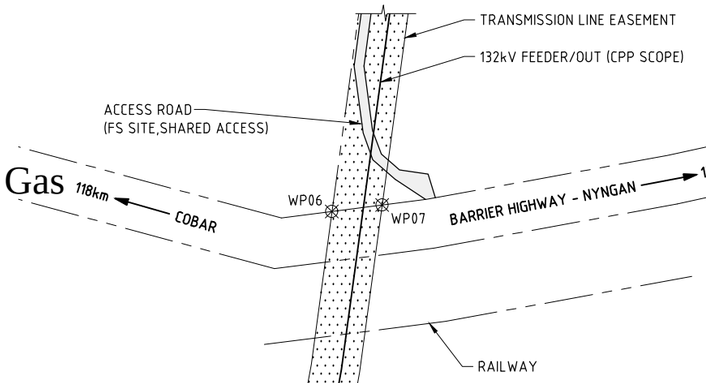
Transformer Oil

83 Transformers (in total) - 77 x PCS, 4 x PVCS, 2 x PVIS/Switchyard with total volume of 166,275L

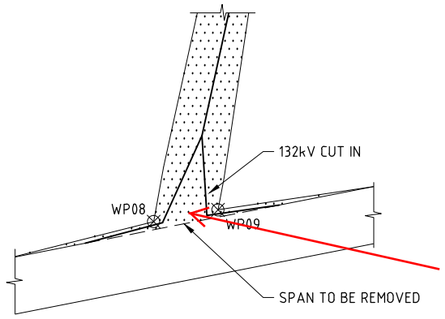
Site Office (Sheltering Area)

Main Plant Access Gate (Evacuation Area)





PVIS & Site Control Centre (SCC) (Fire Fighting Gases)



Site Access (from Barrier Highway)

LOCALITY PLAN

SCALE 1:20000 (A1) 0 400 800 1200 1600 2000m / 400 200

SITE PLAN

SCALE 1:2500 (A1) 0 50 100 150 200 250m / 50 25

SITE CORNER CO-ORDINATES		
WAYPOINT	EASTING	NORTHING
WP01	506920.1	6509397.9
WP02	509666.7	6509994.2
WP03	509431.7	6508263.5
WP04	506685.4	6507665.9
WP05	506727.0	6507675.0
WP06	506467.4	6506056.6
WP07	506508.4	6506061.8
WP08	506217.9	6504695.7
WP09	506270.5	6504705.4

LEGEND:

FS - FIRST SOLAR
CPP - CONSOLIDATED POWER PROJECTS
- FS SITE (SHARED)
- FS SITE
- CPP SITE

NOTES:

1. LOCATION OF TRANSMISSION LINE EASEMENT TO BE VERIFIED BY CONNECTION ASSET CONTRACTOR BASED ON SURVEY PLAN.
2. COORDINATES TO BE VERIFIED ON SITE.

PRELIMINARY ISSUE
FOR DISCUSSION

REV	DATE	DRAWN	REV'D	APP'D	REVISION
A	28.06.13	PAC			INITIAL ISSUE

DRAWING NUMBER | REFERENCE DRAWING TITLE

Site Plan

Emergency Evac Area/DG Manifest

SKM
Level 2, 604 Old Pacific Highway
100 Christie Street
St Leonards, SYDNEY, NSW 2065
AUSTRALIA
Tel: +61 2 9928 2100
Fax: +61 2 9928 2500
Web: www.globalskm.com

CLIENT: AGL
PROJECT: NYNGAN CONNECTION ASSETS
DRAWN: T.CARUSO | DRAWING CHECK: P.CAMPAGNA | REVIEWED | APPROVED
DESIGNED: P.FAGGION | DESIGN REVIEW | DATE | DATE

TITLE: NYNGAN POWER STATION
SUBSTATION AND GRID CONNECTION
LOCALITY & SITE PLAN

SCALE: NTS | DRAWING No: HA01732-EEE-DG-0009 | REV: A

Appendix X – Non Regulated/Regulated Waste Register Form U01

FORM-U01: Non-Regulated Waste Register

Date	Type of Waste (place tick in appropriate column)					Quantity[1]		Tick one end use				Removal Organisation
	Mixed Putrescible	Mixed recycling	Cardboard	Mixed Non-putrescible	Liquid	Weight (kg)	Volume (m^3)	Recycled	Reused	Given	Disposed (this includes landfill and sewerage)	

Notes: (1) where possible provide invoiced quantities; otherwise estimate either weight or volume - Photocopy form as required.

FORM-U01: Regulated Waste Register

Date	Type of Waste (place tick in appropriate column)		Quantity[1]		Tick one end use				Removal Organisation
	Solid Waste	Liquid Waste	Weight (kg)	Volume (m^3)	Recycled	Reused	Given	Disposed (this includes landfill and sewerage)	

Notes: (1) where possible provide invoiced quantities; otherwise estimate either weight or volume - Photocopy form as required.

Appendix Y – Environmental incident Register (Form Q01)

FORM Q01 – Environmental Incidents Register

Note: This form records only incidents and not hazard reports

Incident No.	Date	Nature of Incident

Appendix Z – Water Testing Request Form (and example) and Water Testing Register

SONIC
FOOD & WATER TESTING

Water Request Form

CONTACT

Company: _____

Address: _____

Suburb: _____ State: _____ Postcode: _____

Phone: _____ Fax: _____

Contact: _____

Email: _____

Reports forwarded by (please tick): Fax Email Mail

DATE SAMPLED

_____ / _____ / _____

TIME SAMPLED

_____ : _____ am ☐ pm ☐

SAMPLE DROP OFF DETAILS

Collection Centre: _____

Date of Drop off: _____ / _____ / _____

Time of Drop off: _____ : _____ am ☐ pm ☐

Collection Centre Sign off: _____

CLIENT INFORMATION

TESTS REQUIRED (Please tick)

Water type	Sample Description	Batch/Code	Legionella	Legionella & Plate Count	Plate Count	E.coli	Faecal Coliform	Total Coliforms	Pseudomonas aeruginosa	Enterococci	Yeast & Mould	Pool Testing	Endotoxin	Chemical Suitability for Drinking	Chemical Irrigation use	Chemical Animal Drinking	Individual Chemical Test (Please specify)	Other (please specify)

OFFICE USE ONLY

Arrival Date: _____ / _____ / _____

Arrival Time: _____ : _____ am ☐ pm ☐

Condition of Sample: Satisfactory: Yes ☐ No ☐

Action: _____

_____

Signature: _____

SONIC FOOD & WATER TESTING • 31 LAWSON STREET • PENRITH • NSW 2750
PHONE: (02) 47346580 • FAX: (02) 47323306 • www.sonicfoodandwatertesting.com.au • EMAIL: infofwt@dhm.com.au

SONIC
FOOD & WATER TESTING

Water Request Form

CONTACT

Company: FIRST SOLAR (AUST) PTY LTD.
Address: PO BOX 327.
Suburb: NYNGAN State: NSW Postcode: 2825.
Phone: 0477000640 Fax: -
Contact: BAZ TUPPIN
Email: Beresford.TUPPIN@firstsolar.com
Glenys.millar@firstsolar.com
Reports forwarded by (please tick): Fax Email X Mail

DATE SAMPLED

____ / ____ / ____

TIME SAMPLED

____ : ____ am ☐ pm ☐

SAMPLE DROP OFF DETAILS

Collection Centre: NYNGAN
Date of Drop off: ____ / ____ / ____
Time of Drop off: ____ : ____ am ☐ pm ☐
Collection Centre Sign off: ____

CLIENT INFORMATION — TESTS REQUIRED (Please tick)

Water type	Sample Description	Batch/Code	Legionella	Legionella & Plate Count	Plate Count	E.coli	Faecal Coliform	Total Coliforms	Pseudomonas aeruginosa	Enterococci	Yeast & Mould	Pool Testing	Endotoxin	Chemical Suitability for Drinking	Chemical Irrigation use	Chemical Animal Drinking	Individual Chemical Test (Please specify)	Other (please specify)
TAP	# 1				X	X		X										

OFFICE USE ONLY

Arrival Date: ____ / ____ / ____
Arrival Time: ____ : ____ am ☐ pm ☐
Condition of Sample: Satisfactory: Yes ☐ No ☐
Action: ____
Signature: ____

NYNGAN FIRST SOLAR POTABLE WATER TESTING REGISTER

DATE	SAMPLE NUMBER	LOCATION	TIME SAMPLE TAKEN	AMBIANT TEMP +/-2°	TYPE OF TEST	RESULTS	If action was required - completed Y/N
	1				Heterotrophic Plate Count		
	1				Escherichia Coli Count		
	1				Total Coliform Count		
	2				Heterotrophic Plate Count		
	2				Escherichia Coli Count		
	2				Total Coliform Count		
	3				Heterotrophic Plate Count		
	3				Escherichia Coli Count		
	3				Total Coliform Count		
	4				Heterotrophic Plate Count		
	4				Escherichia Coli Count		
	4				Total Coliform Count		
	5				Heterotrophic Plate Count		
	5				Escherichia Coli Count		
	5				Total Coliform Count		
	6				Heterotrophic Plate Count		
	6				Escherichia Coli Count		
	6				Total Coliform Count		
	7				Heterotrophic Plate Count		
	7				Escherichia Coli Count		
	7				Total Coliform Count		
	8				Heterotrophic Plate Count		
	8				Escherichia Coli Count		
	8				Total Coliform Count		
	9				Heterotrophic Plate Count		
	9				Escherichia Coli Count		
	9				Total Coliform Count		
	10				Heterotrophic Plate Count		
	10				Escherichia Coli Count		
	10				Total Coliform Count		
	11				Heterotrophic Plate Count		
	11				Escherichia Coli Count		
	11				Total Coliform Count		
	12				Heterotrophic Plate Count		
	12				Escherichia Coli Count		
	12				Total Coliform Count		

Appendix AA – Module Safety Procedures

MODULE REPLACEMENT

1.0 PURPOSE

This procedure establishes the requirements and procedure for the safe replacement and documentation of First Solar PV Modules.

2.0 SCOPE

This procedure applies to all First Solar PV Plants unless superseded by a site-specific document.

Approved By R Calla Date 11-16-12

VP, Operations and Maintenance

REVISION HISTORY

DATE	REVISION	ACTION
11/26/2010	0.0	First Edition
02/02/2011	1.0	Added Module Return Codes
3/16/2012	2.0	Added requirement to use MC4 connector tool to disconnect modules

Table of Contents

Appendices and Forms

3.0 RESPONSIBILITY AND AUTHORITY

3.1 The First Solar Operations and Maintenance Group is responsible for development and maintenance of this procedure.

3.2 Site Technicians have overall responsibility for the inspection, removal and installation of modules on First Solar PV Power Plant sites.

4.0 APPLICABLE REGULATIONS, CODES AND STANDARDS

4.1 U.S. Federal – Section 1910.147 in Title 29 CFR "Control of Hazardous Energies".

4.2 NFPA 70E – Standard for Electrical Safety in the Workplace.

4.3 California State – Section 3314 in Title 8 CCR "Cleaning, Repairing, Servicing, and Adjusting Prime Movers, Machinery, and Equipment".

4.4 Ontario, Canada Provincial – Ministry of Labour Occupational Health and Safety Program.

5.0 SAFETY

5.1 **General Photovoltaic Array Safety:**

5.1.1 Photovoltaic (PV) modules will be "live" or "hot" upon exposure to light. There will be voltage present on the output terminals of the solar modules. The voltage will vary according to environmental conditions. An array will generate substantially higher than the system nominal voltage. Safe work habits and a clean work environment will greatly reduce the chance of personal injury and property damage. It is recommended that the module remains packed in the box until time of installation.

5.1.2 The solar photovoltaic array in this system has the potential of producing an open circuit voltage in excess of 1000VDC. A single First Solar module has the potential to produce open circuit voltage in excess of 90VDC. This voltage can be lethal even at small currents.

5.1.3 A solar photovoltaic system has unique electrical characteristics (therefore, unique hazards). These hazards are not common when working with other styles of power generating sources. If you are unsure, or do not possess the proper background or experience, do not touch any of the enclosures or wires on the photovoltaic array. Contact First Solar Electric for technical assistance when working with or on this system.

5.1.4 Proper PPE and guidelines set forth in NFPA 70E should be followed at all times. Energized work is defined as the maintenance, adjustment, or repair of components or conductors that are electrically energized at 50V or more. Work on de-energized circuits within the prohibited approach boundary (1" at 480V) of other energized conductors is considered energized work.

5.1.5 Personnel should never work on PV systems alone. Recommendations by the manufacturer state that work should be performed on solar photovoltaic systems with no less than two technicians. Technicians shall be trained in basic first aid and CPR.

5.1.6 Always perform the following:

- Test all points with a multi-meter prior to touching. Be sure that there is no current present. Testing should be for both current and voltage.
- Use the correct tool and safety equipment for the given job. Be sure that the safety equipment used is rated for the appropriate voltages.
- Work with a partner who is in sight and have a safety plan in the event there is an accident. Such a plan will take the form of a job hazard analysis which will be developed by the team undertaking the work and signed off by the Site Supervisor.

5.2 Module General Safety

CAUTION

First Solar modules should be handled in the same manner as a piece of glass. The use of cut-resistant gloves and safety glasses (ANSI Z87.1-2003) to protect from lacerations and eye injuries is required when handling a First Solar module whether the module is intact or damaged.

CAUTION

Never disconnect a module under load, the entire system should be taken off line and locked out until the sub-array or module is isolated from the system.

5.2.1 First Solar modules utilize cadmium telluride (CdTe) as the semiconductor material. An extremely thin layer of CdTe, a stable compound, is deposited and bonded to the surface of one sheet of glass and encapsulated by another sheet of glass creating the complete module which is also sealed with a laminate material. The physical properties of CdTe limit its mobility especially when encapsulated between two sheets of glass in a laminated First Solar module.

5.2.2 The risk of exposure to CdTe from a damaged First Solar module is negligible since breakage alone is usually not sufficient to both de-laminate the module and to chemically or physically de-stabilize the semiconductor material.

5.2.3 There is no Material Safety Data Sheet (MSDS) associated with a First Solar module since a First Solar Module is a finished product and not a chemical substance which requires a MSDS.

5.2.4 These modules should be treated in the same manner as would a piece of glass be treated. Do not drop module or allow objects to fall on the module. Do not stand or step on module.

5.2.5 Never disconnect a wire before you have checked the voltage and current. Do not presume anything is in perfect order. Do not trust switches to operate perfectly and do not assume schematics have been followed during installation. Use a digital voltmeter to verify voltage. Test the voltmeter regularly to assure its proper operation

5.3 Module Handling PPE

5.3.1 Special care and the use of Kevlar gloves to protect employee's hands from cuts should be observed when handling modules whether the module is intact or damaged.

5.3.2 When performing maintenance on the system, wear the appropriate clothing.

5.3.3 Wear safety glasses with non-conductive frames.

5.3.4 Remove all jewelry.

5.3.5 It is recommended that employees wear a "dielectric" hard hat any time they are working under an array or on a system with hardware higher than their head.

5.3.6 The solar module assemblies used on your system weight approximately 27 lbs; many conditions can affect the safe handling of material (wind, terrain, size of material, physical ability, ability to see where a person is walking, etc.) and all conditions need to be taken into consideration when planning the safe way to do a job.

5.4 Broken Modules Safety

5.4.1 Special consideration should be taken in handling a broken solar photovoltaic module.

5.4.2 In the event that the module is broken and the glass is shattered, there is a potential of electric shock.

5.4.3 Broken glass should be promptly and thoroughly cleaned up and placed in proper container to be sent for recycling.

5.5 ***Module Installation***

5.5.1 Modules should be secured as soon as possible after being properly placed on mounting structure to assure that the module is not inadvertently moved or dislocated.

5.5.2 Proper grounding, along with over current protection, limits the damage that a ground fault can cause. Connect the installed modules to ground as soon as possible to prevent unwanted currents from flowing, and possibly causing personal injury or equipment damage.

6.0 MATERIALS

6.1 Appropriate FS PV module

6.2 FS module clips

6.3 Water

7.0 SAFETY INSTRUCTIONS

7.1 NFPA 70E requirements

7.2 Site specific EH&S manual

7.3 Site LOTO procedure

8.0 EQUIPMENT

Equipment for this procedure includes the following:

8.1 Standard Technician tool kit comprised of basic hand tools.

8.2 Multi-contact MC4 assembly tool (Part # 32.6024)

8.3 Nylon or other non-metallic bristle brush (for cleaning module clip rubber inserts)

8.4 Calibrated CATIII 1000V rated digital multimeter.

8.5 Proper PPE IAW NFPA 70EHRC 0 and Kevlar gloves for module handling.

8.6 Calibrated CATIII 1000VDC clamp on DC Amp meter or equivalent.

Initials

9.0 PROCEDURE

9.1 **INFORM** the FSOC of the initiation of this procedure

9.2 **ENSURE** the correct module is de-energized and locked out at the combiner box in accordance with the Site Operating Plan.

9.3 **VERIFY** the system is in an electrically safe condition.

WARNING: IF module is damaged, it must be handled in accordance with Section 5.3 and 5.4, Broken Module Safety.

9.4 **INSPECT** module, cord plates and leads for signs of damage.

WARNING: Electrical safety PPE must be worn when connecting or disconnecting modules or harnesses.

WARNING: Modules or harnesses with MC4 connectors must use the MC4 assembly tool to disconnect the module or harness

9.5 **DISCONNECT** module from the harness as follows:

9.5.1 Obtain and wear appropriately rated electrical safety gloves with leather gloves

9.5.2 For modules with MC3 connectors, Disconnect by hand.

9.5.3 For modules with MC4 connectors, Disconnect using the MC4 assembly tool

NOTE: If the module is held in place with slip clips, some water may sprayed on the clip pads to allow the module to slide out of the clip.

9.6 IF module is held in place with screw clips,
REMOVE or loosen clip as required to allow removal.

9.7 **INSPECT** module clips and screws for evidence of corrosion.

9.7.1 IF evidence of corrosion is discovered on the module clips, washers or screws, **REPLACE** the module clip and/or screw with appropriate hardware.

9.8 **LIFT** the module from the table using proper lifting techniques **AND**
INSERT into an appropriate container. See section 5.3 and 5.4 for proper handling.

9.9 **RECORD** old module serial number, date/time, and the appropriate failure code as listed in Appendix B, on form located in Appendix A.

9.10 **RECORD** replacement module serial number in Appendix A.

9.11 Clean module clip rubber inserts with water and a brush to remove any debris that might cause issues with the clip properly holding module in place.

9.12 **INSTALL** replacement module and secure in place based on the module type.

_____	9.13 using a Amp meter **VERIFY** the string has zero (0) amps then, **CONNECT** module to the harness.
_____	9.14 **WHEN** all required modules are replaced, **REMOVE** lockout **AND** re-energize combiner box in accordance with the Site Operating Plan.
_____	9.15 **INFORM** the FSOC of the completion of this procedure
	END OF PROCEDURE

Appendix A - Module Replacement Log

Facility Name: _____

DATE	DAMAGED MODULE Serial Number	Array, Row, Table	Type of Damage	REPLACEMENT MODULE Serial Number	Remover's Name

Appendix B - Module Warranty Codes

A	Defect out of Box (typical glass breakage or transport damages detected upon arrival)
B	Handling & Installation Damages on modules which occur because of wrong handling or incorrect movement or settling installation.
C	Intrinsic Defect after Field Deployment (glass breakage or cracks, defect wires, no power (dead), ect.)
D	Low Power Output
E	Defect due to external causes

Appendix AB – Working at Height Permit

AAA – HCP 01A Working At Heights

Permit No _____

1. All persons must be trained and competent to perform Work at Heights and any other related tasks covered under this permit.
2. All equipment (including harnesses) used must comply with site and/or legislative inspection requirements.
3. A competent First Solar person must review and sign this permit before work commences.
4. Please complete all sections relevant to the work you are performing

SECTION 1 - PERMIT DETAILS: (completed by Permit Acceptor and Permit Issuer)							
Project Name:				**Project No:**			
JHA Reference No:				**Permit to Work No:**			
Work Location:							
Start Date:		**Start Time:**	:	**Finish Date:**	/ /	**Finish Time:**	:
Type of work to be performed:	☐ **Work Box**	**Scaffold** ☐	**EWP** ☐	**Ladders** ☐	**Roof** ☐	**Steel Erection** ☐	
Specific location and type of work:							

PERMIT HOLDER: (Person in charge of job)	**COMPANY:**	**DATE:**
First Solar COMPETENT PERSON: (Site person the work party is reporting to)		

Person in charge	Shift	Date	Person in charge	Shift	Date
	D/A			D/A	
	D/A			D/A	
	D/A			D/A	

Section 2 – Work Party Register commences and "SIGN OFF" after completion of work

Name	Signature On	Time	Signature Off	Time	Total hours

Section 3 – Working at Heights Pre-Work Checklist			
ALL QUESTIONS MUST BE ANSWERED BY TICKING THE RELEVANT BOX	**YES**	**NO**	**N/A**
1. Are all members of the work party trained and competent in the correct use of all working at heights equipment to be used for the task?	☒	☐	☐
2. Have provisions been made to allow demarcation / barricading of the work area including above and below placing the appropriate signage? (Drop Zone Identified)	☐	☐	☐
3. Are spotters required to prevent unauthorised persons entering the drop zone	☐	☐	☐
4. Is traffic control or hard barricading required for the protection of personnel working aloft	☐	☐	☐
5. Has the fall protection/arrest system and required PPE been checked for compliance and certified in good working order?	☐	☐	☐
6. Is a means for tool restraint provided? Has all ancillary equipment been secured?	☐	☐	☐
7. Is there a Safe Work Method Statement or JHA available and communicated to the work party? (If the answer is NO then a SWMS is to be completed and attached to the permit)	☐	☐	☐
8. Is the area clean and free from slip/trip hazards?	☐	☐	☐
9. Does any equipment (in the work area or nearby) need to be isolated/bled down/purged and Personal Isolation Locks applied?	☐	☐	☐
10. Is there an emergency plan in place and communicated to the work party? Is rescue equipment available to the work party?	☐	☐	☐
11. Is the work being conducted within 10 metres of live power lines or conductors? (If YES, a risk assessment must be completed and Isolation required)	☐	☐	☐
12. Are weather conditions suitable to carry out this work (i.e. wind, rain)?	☐	☐	☐
13. Will the work involved require the use of a man lift box suspended from a crane	☐	☐	☐

Section 4 – Emergency Plan
List Possible Emergency Scenarios:
Explain the Rescue Method for above Scenarios
Outline Rescue Equipment Required

		YES	NO
	Horizontal Life Line	☐	☐
	Scaffold	☐	☐
	EWP / Scissor Lift	☐	☐
	Harness	☐	☐
	Man lift box	☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Section 5 – Permit Holder Certification	
CERTIFICATION BY PERMIT HOLDER	
I certify that each person that has signed onto the work party register	Initial
A risk assessment for the proposed work has been completed (if required)	Initial
The appropriate section(s) of this work permit have been completed	Initial

Section 6 – Work Authorisation							
FIRST SOLAR COMPETANT PERSON							
I have checked the relevant sections of this permit				Initial			
I have discussed all questions that have been answered as “NO” with the permit holder				Initial			
I authorise the commencement of the proposed work				Initial			
I authorise the use of a man lift basket suspended from a crane (after a mobile crane check list completed)				Initial			
This permit is valid							
From:	/ /	Time	:	To:	/ /	Time	:
Name (print)				Signature		Date	

Section 7 – Cancellation of Multi Work Permit		
CANCELLATION (SIGN OFF) BY BOTH PARTIES	**YES**	**NO**
As the Permit Holder I hereby report that in cancelling this work permit the work party have:		
Carried out work in accordance with the risk assessment completed for the task	☐	☐
Cleaned up the immediate work area.	☐	☐
Confirmed that all persons have signed off this permit and the equipment is safe to operate relative to the work carried out under this permit.	☐	☐
Where equipment is unable to be returned to service, fitted an “Out of Service” Lock (where applicable)	☐	☐
. Visually inspected the work area to ensure the task is completed and the equipment is ready for use	☐	☐

Permit Holder		
Name (print)	Signature	Date
Competent Person		
Name (print)	Signature	Date

Appendix AC – Confined Space Permit

APP - HCP: 06A Confined Space Entry Permit

PART A: GENERAL PERMIT DETAILS: (completed by Permit Acceptor and Permit Issuer)							
Project Name:				**Project No:**			
JHA Reference No:				**Permit to Work No:**			
Work Location:							
This written authority is valid	/ /	**Start Time:**	:	**Finish Date:**	/ /	**Finish Time:**	:
Define Scope of Works to be undertaken (as per the referenced JHA):							

PART B: ENTRY REQUIREMENTS: (completed by Permit Issuer)			
• Will hot work be conducted? *(Attach permit)*		Yes	No
• Confined space identification & assessment checklist available?		Yes	No
• Hazard ID reviewed & acceptable?		Yes	No
• SWMS reviewed & acceptable?		Yes	No
3. Isolation of confined space			
Has the space been isolated from			
• Automatic fire extinguisher systems?	N/A	Yes	No
• Hydraulic/electric/gas/power?	N/A	Yes	No
• Mechanical/electrical drives?	N/A	Yes	No
• Sludge/deposits/waste?	N/A	Yes	No
• Water/gas/steam/chemicals?	N/A	Yes	No
Have isolation points been locked out?	N/A	Yes	No
4. Confined space atmosphere			
Has the atmosphere been tested?		Yes	No
Test results			
• Test date	Test time		
• NATA calibration period for gas detector			
• Oxygen (O_2) (19.5% - 23.5%)			
• Hydrogen sulphide (H_2S) (<10ppm)			
• Flammable gas (<5%LEL)			
• Carbon dioxide (CO_2) (5000ppm)			
• Carbon monoxide (CO) (30ppm)			
Other atmospheric contaminants *(List)*			
5. Entry conditions			
• With supplied air breathing apparatus		Yes	No
• Without respiratory protection		Yes	No
• With escape unit		Yes	No
• Temperatures not extreme for work		Yes	No
• Drinkable water available		Yes	No
• Continuous atmospheric monitoring required (Sufficient battery life for duration)		Yes	No
• Self rescuer *(List use by date if applicable)*		Yes	No

6. Personal Protective Equipment (PPE)		
The following PPE will be used		
• Communication equipment	Yes	No
• Eye protection	Yes	No
• Footwear	Yes	No
• Hand protection	Yes	No
• Harness/lifelines	Yes	No
• Head protection	Yes	No
• Hearing protection	Yes	No
• Protective clothing	Yes	No
• Respiratory protection	Yes	No
• Other	Yes	No
7. Other precautions		
• All persons are trained	Yes	No
• Communications procedure in place	Yes	No
• Emergency rescue equipment	Yes	No
• Smoking forbidden	Yes	No
• Traffic control plan required	Yes	No
• Fall arrest device in place	Yes	No
• Ventilation required	Yes	No
• Warning notices/barricades	Yes	No
• Other	Yes	No
8. Emergency response		
• Emergency plan/ procedure (JHA)	Yes	No
Emergency contact	**Name/telephone number**	
9. Stand-by personnel/requirements		

APP - HCP: 06A Confined Space Entry Permit

10. Chemicals to be used (List)	Haz Sub		MSDS		11. Safe entry		
	Yes	No	Yes	No	Is the confined space safe for entry?	Yes	No
	Yes	No	Yes	No			
	Yes	No	Yes	No	**12. Confined space team**		
	Yes	No	Yes	No	• Have all people entering the confined space been given a SWMS introduction?	Yes	No
	Yes	No	Yes	No			
	Yes	No	Yes	No	• Are they fit for work?	Yes	No
	Yes	No	Yes	No	• Are they trained and equipped?	Yes	No

PART C: PERMIT ISSUE (completed by Permit Issuer)							
The control measures and precautions appropriate for the safe entry and execution of the work in the confined space has been implemented. The persons required to work in the confined space have been told about and understand the requirements of this written authority.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:
PART D: PERMIT ACCEPTANCE (completed by Permit Acceptor)							
I understand and accept the conditions and precautions detailed above. I shall implement all controls and ensure all personnel have been instructed.							
Permit Acceptor:		Signature:		Date:	/ /	Time: (24 hr):	:

PART E: Persons required to enter the confined space					
I have been told about and understand the control measures and precautions to be followed with the entry and work in the confined space.					
ENTRY			**EXIT**		
Name	**Date**	**Time**	**Name**	**Date**	**Time**

PART E: PERMIT CANCELLATION (completed by Permit Acceptor)							
I confirm that all work for which this PTW was issued has been completed, all safety devices and isolations have been removed and the workplace has been inspected and left in a clean and safe condition							
Permit Acceptor:		Signature		Date:	/ /	Time (24 hr):	:
PART F: PERMIT CLOSURE (completed by Permit Issuer)							
I confirm that all work for which this PTW was issued has been completed and verify this PTW has been cancelled by the Permit Acceptor.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

Appendix AD – Energy Isolation Permit

Energy Isolation Permit

PART A: PERMIT DETAILS: (completed by Permit Acceptor and Permit Issuer)							
Project Name:		**Project No:**					
Organisation Name:		**Permit to Work No:**					
Work Location:		**JHA Reference No:**					
Start Date:	/ /	**Start Time:**	:	**Finish Date:**	/ /	**Finish Time:**	:
Define Scope of Works to be undertaken (as per the referenced JHA):							
Equipment to be Isolated (e.g. Electrical, Pressure, Fluids, Gas, Mechanical). **Note:** If High Voltage, a High Voltage Switching Sheet must also be completed and attached							

PART B: ISOLATION INFORMATION: (completed by Authorised Equipment Preparer)							
NOTE: ALL SYSTEMS SHALL BE CONSIDERED ENERGISED UNLESS PROVEN DE-ENERGISED. FIRST SOLAR WILL NOT PERMIT ANY WORKS TO BE CARRIED OUT ON ENERGISED EQUIPMENT							
EQUIPMENT NAME	**LOCATION**	**LOCK NO**	**ISOLATION POINT** (e.g. Main isolator, fuses Pulled)	**ISOLATION TECHNIQUE** (e.g.chain and lock)	**ISOLATED BY**	**VERIFIED BY**	**PROVEN DE-ENERGISED BY**
ENERGY ISOLATION CONTINUATION RECORD ATTACHED: ☐ YES ☐ NO				**HV SWITCHING SHEET ATTACHED:** ☐ YES ☐ NO			

PART C: PERMIT ISSUE (completed by Permit Issuer)							
I confirm the energy source(s) as nominated on this Isolation PTW have been isolated and de-energised. Isolation lock(s) and tag(s) are fitted and witnessed by the Permit Acceptor. The isolation keys have been returned to the Lock and Key control box/group lock box and it is safe for work to proceed under the conditions stated in this PTW.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

PART D: PERMIT ACCEPTANCE (completed by Permit Acceptor and Equipment Preparer)							
I confirm the energy source(s) as nominated on this Isolation PTW have been isolated. I have checked the isolation(s) and confirm the system is de-energised. Lockout devices and tags have been fitted and isolation keys returned to the lock and key control box. I understand and accept the conditions and precautions detailed above and shall implement all controls and ensure personnel have been instructed.							
Equipment Preparer		Signature			/ /	Time (24 hr):	:
Permit Acceptor:		Signature:		Date:	/ /	Time: (24 hr):	:

PART E: PERMIT CANCELLATION (completed by Permit Acceptor and Equipment Preparer)									
I confirm that works for which this PTW was issued are incomplete and the systems remain isolated with locks and tags fitted						☐	Yes	☐	No
Permit Acceptor:		Signature		Date:	/ /	Time (24 hr):		:	
I confirm the energy source(s) nominated on this Isolation PTW have had the isolation locks and tags removed and have been re-energised, tested and witnessed. The workplace has been inspected and left in a clean and safe condition.						☐	Yes	☐	No
Equipment Preparer:		Signature			/ /	Time (24 hr):		:	
I no longer require this Energy Isolation Permit and the isolations made under it.						☐	Yes	☐	No
Permit Acceptor:		Signature		Date:	/ /	Time (24 hr):		:	

PART F: PERMIT CLOSURE (completed by Permit Issuer)							
I confirm that all work for which this PTW was issued has been completed and verify this PTW has been cancelled by the Permit Acceptor. All personal safety control precautions have been removed including all safety devices and isolations and the workplace has been inspected and left in a clean and safe condition.							
Permit Issuer:		Signature:		Date:	/ /	Time: (24 hr):	:

Appendix AE – LOTO Documentation Including Training Materials

First Solar
Australian Controlled Sites

Lockout / Tagout (LOTO) Procedure

Uncontrolled copy when printed

Document History		
Rev	**Description**	**Date**
0	Issued for review and comment	06.10.2014
1	Issued for review and comment	06.11.2014
2	Issued for implementation	18.11.2014
3	Review, update & implementation	17.03.2015

Approved by			
Name	**Position**	**Signature**	**Date**
Kean Gee Liew	Electrical Engineer		
Michael Law	Construction Manager		
Beresford Tuppin	HSE Manager		
Bruce Smith	Project Director		

1.0 Purpose

1.1 This procedure defines the minimum requirement for Hazardous Electrical Energy Control, hereafter referred to as “Lockout/Tagout (LOTO)”. The intent of this procedure is to prevent personal injury and equipment damage by ensuring all known electrical sources of energy are secured, released or contained in a safe manner during work activities.

1.2 This procedure provides instructions for:

- Identification and documentation of site personnel authorised as “Higher Authority”, “Tagging Authority” and “Authorised Employee”.
- Requesting a LOTO
- Identifying energy isolations and developing a LOTO permit
- Executing a LOTO permit (energy isolation/release, locking and tagging energy isolations)
- Releasing a LOTO
- Auditing of the LOTO program
- LOTO training requirements

2.0 Scope

This document applies to all First Solar, Contract, and Subcontract employees performing electrical work on First Solar controlled Australian Sites.

3.0 Terms and Definitions

3.1 Adjacent Machinery/Equipment: Equipment near other equipment on which work is being done. If a piece of equipment presents a danger to workers because it is near other equipment being serviced, maintained, constructed or commissioned it shall be locked and tagged out, and its stored electrical energy sources made safe before work is undertaken.

3.2 Affected Employee(s): Any employee whose job requires them to operate or use equipment on which servicing, maintenance, construction or commissioning is done under LOTO. This includes employees whose job requires them to work in the area where this type of servicing, maintenance, construction or commissioning is being done.

3.3 Authorised Employee: An employee who has completed this training and may attach Lock Out and/or Tag out Devices on equipment to perform servicing, maintenance, construction or commissioning on that equipment. An Affected Employee may also be an Authorised Employee. This occurs when the Affected Employee's duties include doing servicing, maintenance, construction or commissioning on equipment that must be isolated using LOTO.

3.4 Authorised Employee List: A list, maintained in the site LOTO Book, containing the names of personnel on site that have been given authority, responsibility, and training to perform the duties of:

- "Higher Authority"
- "Tagging Authority"
- "Authorised Employee"

3.5 Capable of Being Locked Out: An electrical energy isolating device shall be considered to be "capable of being locked out" in any of the following situations:

- If it has a hasp or other attachment to which a lock may be attached preventing accidental operation.
- If it has a locking mechanism built into it to prevent accidental operation.
- The Energy Isolating Device may be locked into position using commercially available Lock out Devices and industry recognized isolation methods.

3.6 Disconnect: A device that isolates the source of electrical energy to a piece of equipment. An acceptable disconnect must have a Lock out Device and a tag attached so that no one may operate the disconnect while work is being performed.

3.7 Energised: Connected to an electrical energy source or containing residual or stored electrical energy.

3.8 Energy Isolating Device: A mechanical device that physically prevents the transmission or release of electrical energy including, but not limited to, the following:

- A manually operated electrical circuit breaker.
- An electrical disconnect switch.

- Manually operated electrical switches by which the conductors of a circuit may be disconnected from all earthed supply conductors, and by which no pole may be operated independently

3.9 Group Lock Box: A box for storing the key(s) to the yellow isolation locks of an active LOTO permit. The lock box serves as a central isolation point for Authorised Employee(s) to place their personal red lock(s) and tag.

3.10 Earth: A conductor used to intentionally connect a piece of equipment to earth to prevent the build-up of voltage that may result in undue hazards to equipment or to personnel.

3.11 Higher Authority: The person(s) on site that has ultimate responsibility for the equipment and operation of the site. Depending on the status of the site, the Higher Authority may be the Site Construction Manager and/or the Commissioning Manager (or their designees) and will be identified in the site's "Authorised Employee List" maintained in the LOTO Book. This person does not have to be electrically qualified.

3.12 Lockout/Tagout Device: A prominent warning device such as a tag and a means of attachment such as a lock, which can be securely fastened to an energy-isolating device to positively prevent the release of energy.

- Personal Red Lock: Individually keyed. Is to be placed with a Personal "Danger Tag" and is used for a Personal Isolation. This Lock and Tag can only be removed by the person who has undertaken the personal isolation. The Personal Isolation Lock shall be removed at the end of each work shift and the LOTO permit signed off.

- Yellow Isolation Lock: May be keyed in sets or individually. Isolation Points are to be locked out utilising a Numbered Yellow Lock and is used in conjunction with an Orange Tag stating "Isolation-Do Not Operate" and denotes association with a specific LOTO permit, lock box and/or task/work group. This Lock is to be placed on the Group Isolation points and can only be removed by the Tagging Authority.

- Master Lock/Black Lock: Individually keyed. May only be placed by an authorised Tagging Authority. A black lock shall be placed on a lock box/hasp/isolation point should the work be incomplete at the end of a shift and the switch/equipment be unsafe to operate. The black lock shall be used in conjunction with a "Do Not Operate" tag.

– "DANGER DO NOT OPERATE" tag - May only be placed by an authorised Tagging Authority. A tag used to identify the isolation points or apparatus, equipment, or lines, which must remain de-energized and isolated for work to be safely performed. For electrical equipment this tag is normally attached to the disconnect switch, breaker, racking mechanism and/or control handle. If fuses are to be removed, the tag is attached to the fuse holder and fuses tagged and stored in a controlled area.

  Unauthorised removal of a "DANGER DO NOT OPERATE" tag and lock or operation of any equipment secured by the tag and lock will result in immediate termination.

3.13 Reference and information only:

– "Out of Service" Tag: This is used to identify equipment that is out of service. This Tag is NOT associated with LOTO. This tag may be removed by an Authorised Person once verification of the work stated on the tag is COMPLETED.

– Green Lock/Tie Wrap is used to prevent inadvertent access to energized equipment and is not associated with LOTO. These devices are used as an administrative control to denote jurisdictional boundaries.

3.14 LOTO Book: Maintained by the Tagging Authority that contains:

- A current copy of this procedure
- An "Authorised Employee List"
- A register of all active and completed "LOTO Permits"
- A register of all "NOE's" (Notice of Energisation).

3.15 LOTO Information: At a minimum of 24 hours prior to any task/work being performed that may affect or pose a risk to other personnel on a FS controlled site, either a Notice of Energisation (NOE) or a General Alert, listing what is being de/energised/worked on, who is performing the work and who is the contact person, shall be distributed to all site personnel via the agreed communication system to allow time for comment or concerns. All active LOTO's and active NOE's shall be communicated to all site personnel via an approved forum as part of the communication and consultation process.

3.16 LOTO Request Form: is a document completed by an Authorised Employee (as a requestor) and submitted to the Tagging Authority. The request form identifies the equipment to be cleared, a description of the work scope, clearance specifications and any other information necessary to determine how the equipment is going to be made safe for work and may include a copy of a current single line diagram showing isolation points required to be isolated.

3.17 LOTO Permit: is the official approval and authorisation document to take a piece of equipment or system out of service for inspection, maintenance or repair work. The permit identifies all known sources of energy and provides guidance for positioning and locking/tagging all known energy isolations so that work can be done with safety to personnel and equipment.

3.18 Qualified Electrical Worker: A worker who holds an Australian issued Electrical Licence and is authorised to perform electrical work on a FS controlled site.

3.19 LOTO Requestor: An authorised employee that has a need to perform work on a system that is or may become energized. This person submits a LOTO request to the Tagging Authority so that a LOTO permit can be generated and the LOTO put in place. The Requestor is responsible to work with the Tagging Authority to ensure the work to be performed is completely understood and that all known sources of energy are isolated. The requestor can also be the LOTO acceptor.

3.20 LOTO Acceptor: An authorised employee accepts the permit and verifies the isolation and/or placement of the yellow isolation locks and tags by the Tagging Authority and who accepts responsibility for the permit to ensures that all members of the work group place their personal red locks and tags on the correct isolation point/hasp or lock box and sign onto the LOTO permit.

3.21 Servicing, Maintenance, Construction and Commissioning: Workplace activities such as, but not limited to, construction, installing, adjusting, inspecting, testing, modifying, and maintaining and/or servicing equipment where an employee may be exposed to the unexpected energisation or start-up of the equipment or release of hazardous energy.

3.22 Tagging Authority: An electrically qualified person and is an authorised employee as defined in 3.4 of this document and is appointed by the Higher Authority. The Tagging Authority is responsible for reviewing the information supplied with the LOTO request, verifying all energy isolation points as listed on the request have been identified, creating the LOTO permit ready to be reviewed and approved by the "Higher Authority".

The Tagging Authority is appointed by the "Higher Authority" and is identified on the site's "Authorised Employee List", maintained in the LOTO Book.

3.23 Work Scope: Written details of the job(s) to be performed, the equipment or systems to be worked on and any details and/or supporting documentation necessary to make a determination of what systems/equipment must be isolated to ensure the safety of personnel performing work.

4.0 Responsibilities

Construction Manager

- Acts as Higher Authority for areas of the site under the control of Construction which may include commissioning areas.
- Assigns on-site electrically qualified authorised person(s) to fill the role of "Tagging Authority".
- Ensures all personnel working in Construction controlled areas to comply with this LOTO procedure.
- In conjunction with Commissioning Manager ensure an adequate supply of locks, tags, and multi-lock devices/Group Lockboxes is available.

Commissioning Manager

- May act on behalf on Higher Authority for areas of the site under the control of Commissioning. Commissioning Manager may delegate to the on-site Commissioning Lead on behalf on Higher Authority.
- Ensures all personnel working in Commissioning controlled areas comply with this LOTO procedure.
- In conjunction with Construction Manager ensure an adequate supply of locks, tags, and multi-lock devices/Group Lockboxes is available.

Sub-Contractors

- Sub-Contractor management team shall ensure their employees understand the requirements of this LOTO procedure.
- Comply with the requirements of this LOTO procedure.
- Provide at least one LOTO Authorised Employee who has completed the FS site LOTO training.

LOTO Requestor

- Must be an authorised employee as defined in 3.4 of this document.
- Completes LOTO Request Form and submits to the Tagging Authority.
- Assist Tagging Authority to assure there is a mutual understanding of the recognized hazards and how the hazards will be eliminated or controlled. Ask clarifying questions to ensure all employees involved understand hazard recognition and control as it relates to the work scope.

LOTO Acceptor

- Must be electrically qualified (as per 3.18) and an authorised employee as defined in 3.4 of this document.
- Accepts LOTO permit from the Tagging Authority and ensures all authorised employees have been issued a personal red lock(s) by the Tagging Authority.
- Assist Tagging Authority to assure there is a mutual understanding of the recognized hazards and how the hazards will be eliminated or controlled. Ask clarifying questions to ensure all employees involved understand hazard recognition and control as it relates to the work scope.

Safety Department

- Conducts periodic Observations and Assessments of this procedure and LOTO activities on the site.
- Assists Higher Authority and Tagging Authority as needed in understanding or administration of this procedure.
- Conducts at a minimum a documented annual audit of this LOTO program. (see "LOTO Observation and Audit Form located in this procedure")

Site Personnel

- All employees shall comply with the requirements of this LOTO procedure.
- Unauthorised removal of a lock or tag belonging to another person is grounds for immediate termination and removal from the site.

Tagging Authority

- Must be electrically qualified and an authorised employee as defined in 3.4 of this document and is appointed by the Higher Authority.
- Ensure the Requestor's specific system condition requirements are reviewed during the preparation of the "LOTO Permit" and ensures the permit is adequate for personnel and equipment safety.
- Issues "LOTO Permits" along with the necessary personal red locks and tags to the Requestor(s).
- Maintains the content and records of the site's LOTO Book. LOTO forms shall be kept for 1 year.
- The Tagging Authority, the permit acceptor and the appropriate work group will ensure the equipment and systems released and ready to be placed in service are released and operated in such a manner as to prevent personnel danger or equipment failure.

5.0 General Guidelines

5.1 Equipment or system LOTO is required in the following situations:

- Whenever cleaning, servicing, testing, or adjusting is being performed on or around equipment where injury could result from unexpected energisation or start-up of the equipment or release of hazardous electrical energy.

- When a guard or safety interlock must be bypassed or removed.
- Where a person must place any part of his/her body where it could be caught by moving machinery or where it could form a pathway for electrical discharge from energized electrical apparatus, that is considered live under normal operating conditions

5.2 Only qualified and Authorised Employees who have completed the required First Solar LOTO training shall perform LOTO on equipment.

5.3 The Tagging Authority will issue each Authorised Employee his/her own personal red lock(s) with key(s). The key(s) for all red lock(s) issued to an Authorised Employee must remain with that person at all times during lockout.

5.4 Only the Authorised Employee may remove his/her red lock(s). If the Authorised Employee is not available and the equipment must be re-energized, only the Higher Authority and Tagging Authority can authorise the removal of the red lock(s) (see "LOTO Removal Notification Form" located in this procedure.)

Failure to remove your red lock and tag before leaving site will be classified as a procedure breach. An incident investigation will take place and this may result in disciplinary action.

- When the Authorised Employee returns back to work, he/she must be notified immediately by the Tagging Authority that his/her red lock(s) has been removed and the reason for the removal.

5.5 Anytime a piece of equipment is locked out, the Authorised Employee must log the activity on the LOTO Permit.

5.6 Low voltage isolation points shall only be operated by a qualified electrical worker.

5.7 High voltage equipment shall only be operated and or switched by a competent and qualified high voltage operator who has been authorised for High voltage switching on a FS controlled site.

6.0 Requesting a LOTO

6.1 The Requestor completes the "LOTO Request Form" located in this procedure.

6.2 The Requestor will provide the following information:

- the specific scope of work to be performed,
- the specific equipment identification (of the equipment to be worked on),
- the date and time the Lockout/Tagout is needed
- A JHA shall be completed, detailing the specific work, for review as part of requesting a LOTO

6.3 The Requestor submits the completed "LOTO Request Form" to the Tagging Authority for review and "LOTO Permit" creation.

7.0 Creating a LOTO Permit

7.1 The Tagging Authority reviews the "LOTO Request Form" with the Requestor.

7.2 Tagging Authority and Requestor review applicable job scope and any work orders, electrical prints, or other relevant documents so that all energy isolations are identified.

7.3 When mutual understanding and agreement on energy isolation points are achieved, the Tagging Authority will complete the "LOTO Permit" for sign off by the Higher Authority.

7.4 If High Voltage Isolations are required as part or all of the LOTO Request, the High Voltage Switching Authority will be requested, by the Tagging Authority, to organise a High Voltage isolation. Refer First Solar High Voltage Safety Management Plan.

7.5 Once the LOTO has been approved by the Higher Authority it will be issued to the LOTO acceptor who shall acknowledge acceptance by printing his name in legible writing in the "Acceptor" box on the LOTO permit.

8.0 Sequence of LOTO – Single point Isolation.

8.1 All persons placing locks and tags and preforming servicing, maintenance, construction or commissioning on equipment shall meet the training qualifications of an Authorised Employee and names be placed on the "Authorised Employee List Form", located in this procedure.

8.2 Tagging Authority will issue the "LOTO permit" to the permit acceptor so that listed equipment can be properly isolated, locked, tagged and earthed as necessary.

8.3 Notify all affected employees that a LOTO is going to be utilized, the equipment, the reason, and the expected duration. Refer to point 3.14 of this document.

8.4 If the machine or equipment is operating, shut it down by normal stopping procedures (depress stop button, open switch, etc.).

8.5 Operate the switch, breaker or other energy isolating device(s) listed on the "LOTO Permit" so that the equipment is isolated from its energy source(s). Stored energy must be dissipated by methods such as earthing or shorting. All earths will be listed in the" LOTO Permit – Switching Order".

8.6 Attach the completed personal red lock and tag to the applicable isolation point as listed on the "LOTO Permit". All tags shall include:

- Authorised Employees name
- Contact phone number
- LOTO sequence (permit) number

8.7 After Isolation is complete as per the LOTO permit, the equipment must be tested to verify all hazardous energy have been released/isolated "Test for Dead".

8.8 No device shall be operated with a personal red lock and tag attached regardless of circumstances.

8.9 No person shall remove another person's personal red lock or tag.

8.10 Multi lock devices or group lock boxes shall be used when more than one Authorised Employee is working under the "LOTO Permit" or multiple permits affect an isolation point. **ALL** persons performing servicing or maintenance on the equipment shall have an individual lock and tag in place either on energy isolation, multi lock device or on the group lock box.

8.11 Should additional Authorised Employees need to perform work on the existing LOTO, the work shall stop and the Tagging Authority will be contacted to advise of the need for change. The LOTO permit will be cancelled and a new permit will issued.

8.12 The Authorised Employee maintains control of the personal red lock key until the LOTO is released.

9.0 Sequence of LOTO – Group Lockouts - 2-5 People using a Hasp or Scissor Device

9.1 If more than one Authorised Employee will be working on equipment that is to be locked out, each shall place his/her own personal red lock and tag on the energy isolating device(s).

9.2 When an energy isolating device cannot accept multiple locks, a multi-lock device (hasp or scissor device) may be used.

9.3 The Acceptor and Tagging Authority have the responsibility for coordinating the group lockout.

9.4 Using a multi-lock device, hasp or scissor device:

8.4.1 The permit acceptor applies his/her hasp or scissor device and attaches the lockout tag to the energy isolating point and then places their own personal red lock and tag on the hasp or scissor device.

8.4.2 Every Authorised Employee in the group affixes their personal red lock and tag to the hasp or scissor device when they begin work and removes their lock and tag when they complete their work on the equipment being serviced.

8.4.3 If the number of personal red locks required, exceeds the number of locks the device can accommodate, a group LOTO box will be used.

8.4.4 When the work is complete, the Tagging Authority, in conjunction with the permit acceptor, determines when it is safe to re-energize the equipment.

10.0 Sequence of LOTO - Group LOTO Boxes – more than 5 people

10.1 Group lockboxes may be used when more than one person will be working under the "LOTO Permit" or there are multiple isolation points as part of the LOTO.

10.2 The Tagging Authority will place the assigned yellow isolation locks and isolation tags on the required energy isolation points identified on the "LOTO Permit". This process shall be witnessed and verified by the permit acceptor. A LOTO lock box is the responsibility of the permit acceptor.

10.3 They will then place the assigned isolation key(s) from the isolation points and any spare or remaining assigned locks in the numbered lockbox

10.4 The permit acceptor will then place their personal red lock and tag on the group lock box

10.5 All other Authorised Employees working on the equipment under the LOTO will check the permit to ensure proper alignment and lock placement and then will place their personal red lock and tag on the group lockbox.

10.6 All Authorised Employees placing their lock and tag on the group lock box will be listed on the "LOTO Permit – Sign On/Off".

11.0 Work Authorization

11.1 When all energy isolations listed on the LOTO permit are positioned and locked/tagged the Acceptor shall initial with date and time in the "all locks/earths installed" box on the "LOTO Permit".

11.2 The Tagging Authority will sign with date and time the "LOTO Issued" section of the "LOTO Permit" to issue the LOTO.

11.3 The Tagging Authority will record the appropriate LOTO information in the "LOTO Log Form".

12.0 LOTO Change

12.1 Should a LOTO be in place and a change is required, i.e. de/energisation of a specific section or component, the following shall occur

- The Tagging Authority will be notified immediately
- The current LOTO permit will be cancelled
- The LOTO process will begin again as per this procedure starting at point 6.0 – Requesting a LOTO.

13.0 LOTO Release

13.1 Before the equipment is available to be placed back in service, the Authorised employee(s) performing the work are/is responsible to **check the area around** the equipment to ensure no one is exposed to hazards as a result of maintenance activity. The check should ensure all tools have been removed, housekeeping or area clutter is acceptable and all employees in the area are clear, covers have been replaced and sealed up and electrical cabinet doors have been closed and locked.

13.2 The permit acceptor will report to the Tagging Authority that the work has been completed and that the locks and earths, where applicable, can be removed.

13.3 The Authorised Employee returning the equipment to service will receive all instructions from the Tagging Authority.

13.4 All Authorised Employees will remove their personal red locks and tag and/or earths, where applicable, from the isolation point/hasp/lock box identified on the "LOTO permit". Removal will be performed as follows:

- Inspect the area and check the work is complete
- Ensure connection of electrical leads, remove all earths, locks, and tags as necessary

13.5 The Authorised Employee that was the permit acceptor shall be the final person to remove his/her locks and will ensure there is no safety issues associated with LOTO release.

13.6 The permit acceptor signs the "Released By" section of the "LOTO Permit" and "LOTO Log Form".

13.7 Yellow isolation locks shall be released by the person whose name appears on the "Tagging Authority" line of the LOTO permit. In the event of an Emergency or a Safety issue and existing LOTO must be released, the responsible permit acceptor will be notified and will return to the site to get LOTO cancelled if possible.

13.8 If at the end of shift, the work is incomplete, the Tagging Authority must be notified and witnesses the removal of all personal red locks and tags. Each Authorised employee must sign off the LOTO permit. Once the permit acceptor has removed his/her lock the Tagging Authority shall place a Black Master lock and a "Do Not Operate" tag on the isolation point/hasp or lock box to ensure that the equipment is not inadvertently returned to service and remains in a safe state until the work is completed.

13.9 In the event an employee cannot be contacted to release a LOTO due to sickness, R & R, etc. and an Emergency or Safety issue is declared the existing LOTO may be released as follows: (Using the "LOTO Removal Notification Form")

- The Tagging Authority must be contacted for the release of the LOTO and will inspect the work area to verify the work has been completed or that it is safe to release the LOTO;
- They will inspect each location where locks have been placed to verify the LOTO permit
- The Tagging Authority will initial the name of the permit acceptor, the associated LOTO permit number, and the isolation point line signatures.
- The Tagging Authority will release the "LOTO Permit" by signing and dating the permit and the LOTO log.
- The original permit acceptor will be notified of the release as soon as possible.

14.0 LOCKOUT AUDIT

14.1 An audit of the LOTO procedure shall be conducted at least once per year at each PV Plant to evaluate its continued effectiveness, to determine the necessity for updating this written procedure, and to help target effective training for employees.

14.2 The audit is to be performed by the Safety Department and shall include the witnessing of at least one actual LOTO process in the normal operations.

14.3 The audit shall be documented on the "LOTO Observation and Audit Form", located in this procedure. Documentation includes:

- Equipment and energy sources on which the LOTO procedure was being utilized
- Audit date
- The employees included in the inspection
- Checklist confirming compliance/failure to key written procedures
- Comments as applicable
- Certification signature and title of the auditor

15.0 TRAINING REQUIREMENTS

15.1 Employees

Employees must be trained before they are assigned to work under LOTO conditions. Authorised Employees should also be re-trained on LOTO whenever:

- Near misses or accidents occur
- An annual audit reveals that the LOTO procedure is not up-to-date, effective, compliant with local regulations, or not being used properly.
- Whenever there are significant changes in procedures to which LOTO applies.

15.2 Affected Employees

Each new or transferred employee and other employees whose work operations are or may be in potential lockout areas shall be trained in:

- The reasons for the LOTO procedure and how it is used.
- The prohibition against restarting or re-energizing equipment which has been locked out.
- The hazards of working in the area of locked-out equipment.

When an Affected Employee's job responsibilities change to include the cleaning, repairing, or servicing operations on machines or equipment subject to LOTO, such employee shall complete the Authorised Employee's training program prior to beginning his/her new job responsibilities.

15.3 Authorised Employees

Authorised employees shall be trained in:

- The hazards related to setup, cleaning, repairing, servicing, or adjusting equipment subject to LOTO
- The safety significance of the LOTO procedure
- The specific steps in performing a LOTO

15.4 Training Documentation

Applicable managers shall ascertain that each affected and Authorised Employee has received and understood the required training. The manager shall prepare a record which contains the identity of the employee, the subject and date of training, and the means used to verify that the employee understood the training.

A current list of authorised lockout employees, including names, titles, and date, shall be maintained at each PV Plant using the "Authorised Employee List" located in this procedure.

16.0 References

- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011
- Applicable Commonwealth and State Electrical Safety Act
- Applicable Commonwealth and State Electricical Safety Regulations
- Project Site Safety Plan (PSSP) – Nyngan Solar Power Station Project
- First Solar High Voltage Safety Management Plan

First Solar LOTO Authorised Employee List

Site Name:			
Name	**Title**	**Department**	**Date**
Higher Authority (Person responsible for site equipment)			
Tagging Authority: (Electrically qualified person Authorise by Higher Authority to create and issue LOTO)			
Authorised Employees (The following personnel have been designated as *Authorised Employees*. All personnel on this list have been trained to perform LOTO activities and have documented training records)			

LOTO Request Form

Site: _____

Requestors Name: _____ Date: _____

Department: _____ WO #: _____

Equipment for LOTO:_____

_____

Job Description: (Attach work order which includes a detailed description of the work to be performed or provide description of work scope)_____

_____

_____

_____

Date/Time Needed: _____ Est. date for LOTO release: _____

LOTO SPECIFICATIONS (PLEASE CHECK YOUR CHOICES) IF YES PLEASE SPECIFY IN SPECIAL INSTRUCTIONS

NEW REQUEST ..... YES ___ NO ___

POWER SUPPLY BREAKER RACKED OUT/OFF ..... YES ___ NO ___

CONTROL POWER DE-ENERGIZED ..... YES ___ NO ___

OTHER WORK GROUP SUPPORT REQUIRED ..... YES ___ NO ___

GROUNDS REQUIRED ..... YES ___ NO ___

Reference Drawings and Procedures (list as applicable)

_____

_____

_____

_____

Special Instructions: _____

_____

_____

_____

_____

LOTO Permit

Site Name: _____ Page _____ of _____

LOTO Number: (Sequential Number)			
Equipment for LOTO:		**Equipment Location:**	
Job Description:			
Acceptor: print name			
The **Acceptor** is responsible for ALL employees working under the protection of the LOTO, coordinating with all Authorised Employees participating in the LOTO.			
Tagging Authority: print name			
Higher Authority: print name			
The **Tagging Authority** is the responsible person for this LOTO and is responsible for identifying all known energy sources and ensuring isolation prior to issuing LOTO and authorizing work.			

LOTO Energy Isolation Points

Energy Isolation Point	Drawing #	Position	Lock#	Lock/ground Installed *(Date, Time, Initials)*	Lock/ground Removed *(Date, Time, Initials)*
				Sign/Date/Time	Sign/Date/Time
LOTO Issued – "Tagging Authority" signature that all energy is isolated and all locks/tags are installed. Ready for work authorisation (**signature and date/time**)					
LOTO Released – "Tagging Authority" signature that all locks/tags have been removed and LOTO is no longer in effect. (**signature and date/time**)					

LOTO Permit (Sign On/Off)

Site Name: _____ Page _____ of _____

LOTO Number: (Sequential Number)			
Equipment for LOTO:		**Equipment Location:**	
Job Description:			
Acceptor: print name			
Tagging Authority: print name			
Higher Authority: print name			

Authorised Employees Participating in LOTO

Name	Company	Phone #	Sign On *(Date, Time, Initials)*	Sign Off *(Date, Time, Initials)*

LOTO LOG

Site Name: _____ Page #: _____

LOTO #	Acceptor	Tagging Authority	Equipment	Issued *(Date, Time, Initials)*	Released *(Date, Time, Initials)*

LOTO Observation and Audit Form

Observers cannot be Tagging Authority or Authorised Employee on the LOTO being observed.			
Date/Time of Observation			
LOTO #			
Observer's Name (Print)			
Acceptor:			
Tagging Authority:			
Equipment:			
DETERMINE IF THE LOTO REQUEST AND PERMIT CREATION WAS COMPLETE BY OBSERVING THE FOLLOWING KEY POINTS			
The Acceptor and Tagging Authority worked to establish clear understanding of work and isolations needed for LOTO.	**Y/N**		
The piece of equipment which is to be placed under LOTO (identification/ location) was clearly defined.	**Y/N**		
The purpose for the LOTO was clearly defined.	**Y/N**		
The boundaries necessary to ensure the safety of personnel and equipment in the LOTO was adequate.	**Y/N**		
The method(s) to verify that the LOTO energy isolation device(s) separates the equipment to be worked on from power supplies or process flows.	**Y/N**		
ATTACHMENT OF THE LOTO			
Did individuals on the LOTO understand the boundaries?	**Y/N**		
Are all employees listed on the LOTO listed on Authorised Employee List?	**Y/N**		
Did the Authorised Employee designated to hang the LOTO stop and involve the Tagging Authority if a boundary point could not be positively identified or if it was unclear to either party involved?	**Y/N**	**NA**	
Did personnel inform the Tagging Authority if a boundary point was not labeled; and then was a label subsequently installed?	**Y/N**	**NA**	
LOCATE ALL FIELD DEVICES AND VERIFY			
Do all LOTO Permit Form descriptions match the equipment tag descriptions?	**Y/N**		
Are all isolation points locked and properly tagged?	**Y/N**		
Is each isolation device properly secured (i.e., breaker or isolating device immobilized)?	**Y/N**		
Is the equipment that is Locked Out and Tagged Out properly isolated and secured for an Authorised employee to perform work (i.e., grounded in necessary)?	**Y/N**		
ADMINISTRATIVE			
Is the LOTO permit listed on the LOTO Permit Log?	**Y/N**		
Is a LOTO Request attached to the LOTO Permit?	**Y/N**		
Are all signatures on the LOTO forms in the correct columns?	**Y/N**		
Do all the locks on the lock box identify the individual(s) that placed the lock(s)?	**Y/N**		
If there were any areas for improvement or deficiencies identified during the audit, list them below:			

LOTO Removal Notification Form

If an Authorised Employee is not available to remove their personal lock(s), a Higher Authority in coordination with the Tagging Authority may remove the lock(s) providing the following steps are executed:

1. The Higher Authority and Tagging Authority are notified that there is an immediate need to remove the Authorised Employee's lock(s) and that the Authorised Employee is not on site.
2. All reasonable efforts shall be made to contact the Authorised Employee.
3. If the Authorised Employee is contacted by phone, the Tagging Authority shall relate the need for the lock removal and request authorisation for lock removal. Tagging Authority shall document the Authorised Employees name and the date and time of the contact below.
4. If the Tagging Authority cannot make contact with the Authorised Employee, then the Tagging Authority shall verify that the Authorised Employee is the only person signed onto the LOTO, walk the LOTO down to ensure there is no hazard created by releasing the LOTO and removing the Lock(s).
5. The Higher Authority in coordination with the Tagging Authority verifies that the equipment is fit to return to service and all Affected Employees are notified and cleared of the area.
6. The Higher Authority and Tagging Authority shall then authorise the removal of the LOTO.
7. The Authorised Employee who originally affixed the lock is made aware that their lock was removed when they report back to work. The Tagging Authority shall complete the Lock Removal Notification Form whenever a LOTO device is removed by someone other than the requestor. The original copy of the Lock Removal Notification Form shall be attached to the cancelled LOTO permit for record keeping purposes.

LOTO No: _____

Lock/Tag removal Authorised by: _____ _____
Higher Authority Tagging Authority

Lock/Tag Removed by: _____ Lock No: _____

Reason for removal by person other than Authorised Employee: _____

_____

_____

Authorised Employee Notified By:

Employee: _____ Date/Time: _____

How was notification made? _____

Acknowledged by the Original Authorised Employee: (after return to site)

Authorised Employee: _____ Date/Time: _____

Nyngan – Energisation and Safety

Lock Out / Tag Out (LOTO)

OSHA Standards

- The Australian Standard for the Control of Hazardous Energy **AS/NZS 3000 & AS/NZS 4836** applies to the control of electrical energy in installations for the purpose of electric power generation, including related equipment for communications or metering.

- NOTE: This LOTO procedure relates to electrical energy only. The Australian Standard for the Control of Hazardous Energy AS/NZS 3000 & AS/NZS 4836 applies to the servicing and maintenance of machines and equipment in which the unexpected start-up or the release of stored energy could cause injury to employees.

Purpose and Scope

- The intent of the Lockout/Tagout Procedure is to **prevent personal injury and equipment damage** by ensuring Hazardous electrical energy sources are secured, released or contained in a safe and secure manner.
- This Procedure shall apply to all First Solar and Contract Employees on all Australian First Solar controlled sites.
- The Contractor's LOTO schedule will be audited to ensure compliance with the LOTO requirements.
- The Contractors shall utilise their own isolation procedure for activities not related to the direct construction of the Australian project such as; light vehicle maintenance, or crane assembly.

Lockout/Tagout LOTO

Lockout/Tagout LOTO is one or more actions taken to prevent an uncontrolled release of electrical energy that has the potential to cause injury or damage to:

- Personnel
- Plant
- Equipment

NO ENERGISED WORK!!!

Lockout/Tagout LOTO

Lockout/Tagout LOTO is achieved by:

- Removing
- Disconnecting
- Placing a barrier/s in front of potential energy sources

The First Solar LOTO Process covered in this training is used for the energy source of Electricity Only

Who Work Under LOTO?

Affected Employees

Any employee whose job requires them to operate or use equipment on which servicing, maintenance, construction or commissioning is done under LOTO. This includes employees whose job requires them to work in the area where this type of servicing, maintenance, construction or commissioning is being done. Personnel MUST be have undergone training on the LOTO Procedure and be authorised

Who Work Under LOTO?

Authorised Employees

Any employee whose job requires them to operate or use equipment on which servicing, maintenance, construction or commissioning is done under LOTO. This includes employees whose job requires them to work in the area where this type of servicing, maintenance, construction or commissioning is being done. Personnel MUST be have undergone training on the LOTO Procedure and be authorised.

Who can request LOTO?

The Authorised Requestor

An authorised employee that has a need to perform work on a system that is or may become energised.

- Requestor's MUST be have undergone training on the LOTO Procedure and be authorised.

- Requests for LOTO must go to the Tagging Authority, to be checked and to create the LOTO Permit.

Who creates LOTO Permit?

The Tagging Authority

- Must be electrically qualified
- responsible for reviewing the information supplied with the LOTO request, verifying all energy isolation points as listed on the request have been identified
- Completes the ‘LOTO Permit’

Who can Authorise LOTO to take place?

The Higher Authority

- Is ultimately responsible for all LOTO and work taking place
- Does not need to be electrically qualified
- Must authorise LOTO Permit before work commences
- Higher Authority will be either the Construction or the Commissioning Manager (or their delegate)

Personal Red Locks

- Must be used when performing LOTO
- Must be used with a ‘Personal Danger Tag’
- Are red in colour
- Are not keyed alike
- May only be placed by the individual who lock was issued to
- May only be removed by the person who lock was issued to
- Are issued by the Tagging Authority when LOTO is authorised

Personal Danger Tags

- Must be used when performing LOTO
- Must be used with a Red Lock
- May only be placed by persons performing LOTO
- May only be removed by the person who placed it
- Must be completed in full, in neat legible writing.
- No nick names
- Is issued by Tagging Authority with red lock once LOTO is approved

Yellow Isolation Lock

- Is yellow in colour
- May be keyed in sets or individually.
- Isolation Points are to be locked out utilising a Numbered Yellow Lock and
- is used in conjunction with an Orange Tag stating “Isolation-Do Not Operate”
- This Lock is to be placed on the Group Isolation points and can only be removed by the Tagging Authority.

Black Master Lock

- Is black in colour
- Individually keyed.
- May only be placed by an authorised Tagging Authority.
- A black lock shall be placed on a lock box/hasp/isolation point should the work be incomplete at the end of a shift and the switch/equipment be unsafe to operate.
- The black lock shall be used in conjunction with a “Do Not Operate” tag.

Green Lock and Out of Service Tag

- Green locks are an administrative control used by the commissioning team only.
- Green locks prevent unauthorised access to combiner boxes.
- Green locks are not part of LOTO
- Out of Service Tag is used to identify equipment that is out of service.
- This Tag is NOT associated with LOTO.
- This tag may be removed by an Authorised Person once verification of the work stated on the tag is COMPLETED.

Communication

- Prior to any task/work being performed that may affect or pose a risk to other personnel on a FS controlled site, either a Notice of Energisation (NOE) or a General Alert, listing
  - what is being de/energised/worked on
  - who is performing the work
  - and who is the contact person

  shall be distributed to all site personnel
- All active LOTO's and active NOE's shall be communicated to all site personnel via an approved forum.

Sequence of LOTO

- ***Step 1- Request a LOTO***

- *A LOTO request is completed by an Authorised Employee (as a requestor) and is submitted to the Tagging Authority.*
- *The request form shall identify;*
  - *the equipment to be cleared;*
  - *a description of the work scope,*
  - *clearance specifications*
  - *and any other information necessary to determine how the equipment is going to be made safe for work*
  - *and may include a copy of a current single line diagram showing isolation points required to be isolated.*

LOTO REQUEST FORM IS SUBMITTED TO THE TAGGING AUTHORITY

Sequence of LOTO

- ***Step 2- Submit LOTO Request to Tagging Authority***

- *The Tagging Authority together with Requestor will review to request, identify all isolation points and create the LOTO Permit*

- ***Step 3- Submit LOTO Permit to Higher Authority for authorisation.***

- *Only the Higher Authority are able to sign off and approve the LOTO Permit*

Sequence of LOTO

- ***Step 4- Ensure safe work***

This should include:

- *Completing or reviewing the JHA for task and ensuring controls are adequate*
- *Grounding / earthing where it is possible*
- *Ensure positive communication with all personnel and advise them of LOTO*

Sequence of LOTO

- ***Step 5- Isolate***

- *If machine is operating, isolate it using correct shut down procedure.*

- ***Step 6- Lock Out Tag Out (LOTO)***

- *Place your Red Lock and Personal Danger Tag on the approved isolation point/hasp or lock box to prevent equipment being re-energised. Ensure all isolation points are covered as per the "LOTO Permit"*

Ensure ALL stored energy is dissipated by methods such as grouding as per the LOTO Permit

Sequence of LOTO

- ***Step 8- Test for Dead***

- *Ensure positive isolation has occurred by using appropriate equipment (multi meter)*

- ***Step 9- Complete work as required***

LOTO Release

After work has been completed, LOTO needs to be removed and equipment re-energised, steps to complete this continue as follows:

- ***Step 10***

- *Personnel completing the work are responsible to check the area to ensure nil exposed to hazards as a result of the LOTO release*

- *The permit acceptor will notify the Tagging Authority*

- ***Step 11***

- *All Authorised Employees will remove their personal red locks and tag and/or earths, where applicable*

LOTO Release

- ***Step 12***

- *The permit acceptor will be the last person to remove their personal red lock and tag and ensure no safety issues associated with release. The acceptor must then sign the "Released By" section of the LOTO Permit*

- ***Step 13***

- Ensure safe energisation of the equipment

Group LOTO

Group LOTO

- When there are up to 5 Authorised Employees needed to work on equipment, a hasp or scissor lock can be used to allow all people to place their Red Lock and Tag

Group LOTO

- When there are more than 5 Authorised Employees needed to work on equipment or there are multiple isolation points a Group Lock box Is used

- Group Lock out's are the responsibility of the acceptor. The Acceptor must be the last person to release any group LOTO

Failure to remove Personal Danger Lock

All Personal Danger Locks need to be removed before leaving site. If you fail to do this:

- You will be contacted to verify your whereabouts
- Authorisation must be gained through the Higher Authority and LOTO removal form completed
- An incident will be raised
- May result in disciplinary action

LOTO must only be released by the Tagging Authority once all permissions have been gained and it has been deemed safe to do so!

Incomplete Work

If work has not been completed by the end of shift, the Tagging Authority must be notified and witness the removal of the Red Locks and Tags of the Authorised employees.

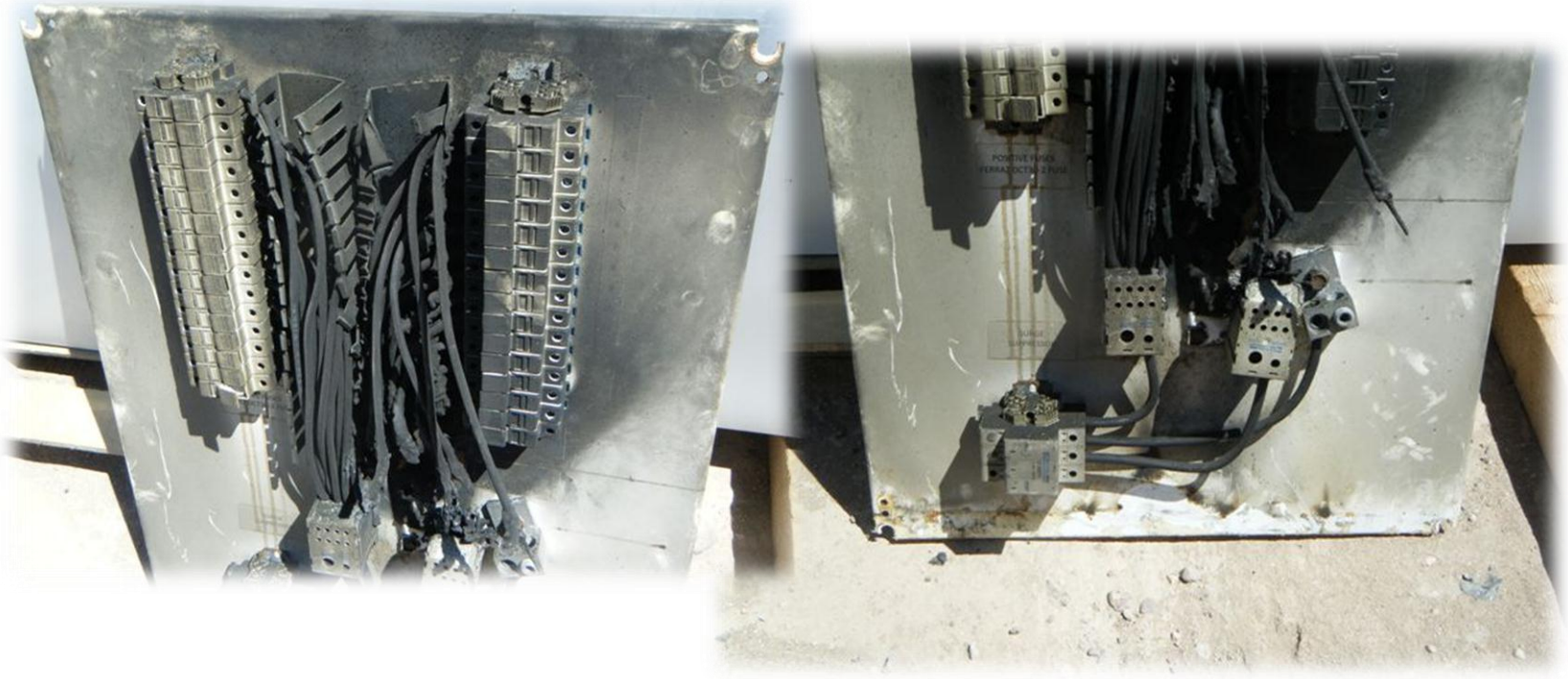
Each Authorised Employee must then sign off the LOTO Permit.

It is the responsibility of the Tagging Authority to ensure that a Master Lock and tag is placed on to each isolation point (hasp or group lock box) to allow the work area to remain safe until the work recommences

Training and Equipment

- Workers shall be trained
  - In safety related work practices & procedural requirements
  - Understand relationship between electrical hazards & possible injury
  - Method of operation
  - Documentation
- Test Equipment
  - Visually inspected
  - Calibrated
  - Operation verified
  - Suitability for use
    - Equipment rating
    - Operating environment
- Proper PPE
  - **Assigned PPE CANNOT BE TRANSFERRED to another person!**

Hazards associated with Non-compliance- Combiner Box Fires



Combiner Box Fires

TRAINING ASSESSMENT

LOTO

Lock Out Tag Out

Trainee Name:	
Assessor Name:	
Date:	
Trainee Signature:	
Assessor Signature:	
COMPETENT	**NOT YET COMPETENT**

TRAINING ASSESSMENT

Final Assessment- Theory

Notes for the trainee:-

This will be a written assessment, which may be supplemented with oral questioning if required. All questions may be presented verbally and comprehensive verbal responses will be documented by the assessor in this assessment document.

If you do not understand a question, ask the assessor for clarification.

You will need to answer all questions correctly to be assessed as competent. If you are deemed Not Yet Competent (NYC), the trainer/assessor will need to undergo further training with you.

Notes for the Assessor:-

Indicate whether an answer is correct or incorrect by marking with a "✓" if the answer is correct or a "X" if the answer is incorrect.

The trainee will need to answer all questions correctly to be assessed as competent. If the trainee is deemed Not Yet Competent (NYC), an action plan will need to be developed and outlined in the table below:

ACTION PLAN (If NYC)
The following action plan needs to be completed prior to a subsequent attempt to complete this component of the final assessment

TRAINING ASSESSMENT

Question 1.

There is to be no energized work at any time

TRUE / FALSE

Question 2.

List 3 of the duties of the Tagging Authority

1.
2.
3.

Question 3.

Which personnel involved in LOTO must be electrically qualified?

a) None, LOTO is for anyone working on equipment

b) The Acceptor

c) The Tagging Authority

d) Both b & c

Question 4.

Who needs to have successfully completed this training before being involved in LOTO?

a) Authorised employees

b) The Requestor

c) The Tagging Authority

d) The Higher Authority

e) All of the above

TRAINING ASSESSMENT

Question 5.

Draw a line to match the person/s to their role in LOTO

Authorised Employee	Must be electrically qualified and is accepting LOTO
Acceptor	Is responsible for final sign off of LOTO Permit
Tagging Authority	Trained employees working or assisting with LOTO
Higher Authority	Verifies all isolation points and creates LOTO Permit

Question 6.

Red Locks must only be removed by the person who placed them.

TRUE / FALSE

Question 7.

List 3 bits of information that must be included on the LOTO request form in the table below

1.
2.
3.

Question 8.

This picture indicates which of the following:

a) The equipment is currently under a LOTO permit

b) Attempting to re-energise equipment may cause serious harm to myself or others

c) Equipment is being fixed, maintained, constructed or commissioned

d) All of the above

Question 9.

Earthing and positive communication are required before LOTO to ensure safe work

TRUE / FALSE

Question10.

A 'test for dead' is not required prior to LOTO as the equipment is locked out and cannot be started

TRUE / FALSE

Question 11.

Which is the correct sequence for LOTO Release / re-energisation?

a)

b)

c)

d)

TRAINING ASSESSMENT

Question 12.

A hasp or scissor lock is used for group isolations up to 5 people

TRUE / FALSE

Question 13.

When is Group LOTO performed under a Lock Box?

Question 14.

If you fail to remove your Red Lock

a) Its no big deal, someone else can remove it

b) It is a procedure breach and you may receive disciplinary action

c) None of the above

Question 15.

If work is not completed by the end of shift:

a) A Black Master lock is placed by the Tagging Authority to allow the work area to remain safe until work commences

b) Removal of Red Locks and Tags must be witnessed by the Tagging Authority

c) You leave work as normal and start on the job again the next day

d) Both a & b

Question 16.

What is a potential hazard for failing to comply with effective isolation and LOTO?

TRAINING ASSESSMENT

Theory Component	
Result: **Must be 100%**	/ 16
Trainers signature:	
Trainers name:	

TRAINING ASSESSMENT

LOTO

Lock Out Tag Out

Trainee Name:	
Assessor Name:	
Date:	
Trainee Signature:	
Assessor Signature:	
COMPETENT	**NOT YET COMPETENT**

TRAINING ASSESSMENT

Final Assessment- Theory

Notes for the trainee:-

This will be a written assessment, which may be supplemented with oral questioning if required. All questions may be presented verbally and comprehensive verbal responses will be documented by the assessor in this assessment document.

If you do not understand a question, ask the assessor for clarification.

You will need to answer all questions correctly to be assessed as competent. If you are deemed Not Yet Competent (NYC), the trainer/assessor will need to undergo further training with you.

Notes for the Assessor:-

Indicate whether an answer is correct or incorrect by marking with a "✓" if the answer is correct or a "X" if the answer is incorrect.

The trainee will need to answer all questions correctly to be assessed as competent. If the trainee is deemed Not Yet Competent (NYC), an action plan will need to be developed and outlined in the table below:

ACTION PLAN (If NYC)
The following action plan needs to be completed prior to a subsequent attempt to complete this component of the final assessment

TRAINING ASSESSMENT

Question 1.

There is to be no energized work at any time

TRUE / FALSE

Question 2.

List 3 of the duties of the Tagging Authority

1.	1. Any 3 of the following: Must be electrically qualified, Responsible for identifying all isolation points for LOTO, Reviews with requestor and determines safe and efficient LOTO, Completes the LOTO Permit
2.	
3.	

Question 3.

Which personnel involved in LOTO must be electrically qualified?

a) None, LOTO is for anyone working on equipment

b) The Acceptor

c) The Tagging Authority

d) Both b & c

Question 4.

Who needs to have successfully completed this training before being involved in LOTO?

a) Authorised employees

b) The Requestor

c) The Tagging Authority

d) The Higher Authority

e) All of the above

TRAINING ASSESSMENT

Question 5.

Draw a line to match the person/s to their role in LOTO

Authorised Employee	Must be electrically qualified and is accepting LOTO
Acceptor	Is responsible for final sign off of LOTO Permit
Tagging Authority	Trained employees working or assisting with LOTO
Higher Authority	Verifies all isolation points and creates LOTO Permit

Question 6.

Red Locks must only be removed by the person who placed them.

TRUE / FALSE

Question 7.

List 3 bits of information that must be included on the LOTO request form in the table below

1. 1. Any 3 of the following: Date / Time / Location of LOTO, Description of the work, LOTO Specifications, any other info needed to perform safe and efficient LOTO
2.
3.

Question 8.

This picture indicates which of the following:

a) The equipment is currently under a LOTO permit

TRAINING ASSESSMENT

b) Attempting to re-energise equipment may cause serious harm to myself or others

c) Equipment is being fixed, maintained, constructed or commissioned

d) All of the above

Question 9.

Earthing and positive communication are required before LOTO to ensure safe work

TRUE / FALSE

Question10.

A 'test for dead' is not required prior to LOTO as the equipment is locked out and cannot be started

TRUE / FALSE

Question 11.

Which is the correct sequence for LOTO Release / re-energisation?

a)

b)

c)

TRAINING ASSESSMENT

d)

Question 12.

A hasp or scissor lock is used for group isolations up to 5 people

TRUE / FALSE

Question 13.

When is Group LOTO performed under a Lock Box

When there is more the 5 people required to work on the equipment / take part in the LOTO or there are multiple isolation points

Question 14.

If you fail to remove your Red Lock

a) Its no big deal, someone else can remove it

b) It is a procedure breach and you may receive disciplinary action

c) None of the above

Question 15.

If work is not completed by the end of shift:

a) A Black Master lock is placed by the Tagging Authority to allow the work area to remain safe until work commences

b) Removal of Red Locks and Tags must be witnessed by the Tagging Authority

c) You leave work as normal and start on the job again the next day

d) Both a & b

TRAINING ASSESSMENT

Question 16.

What is a potential hazard for failing to comply with effective isolation and LOTO?

Combiner box fires, Arc Flah, Serious Injury, Death, Property Damage etc

Theory Component	
Result: **Must be 100%**	/ 16
Trainers signature:	
Trainers name:	