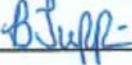

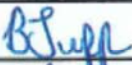
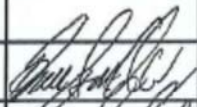
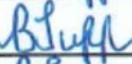
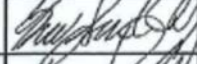
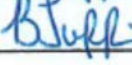
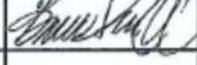


**Project Risk Register
Nyngan Solar Power Station Project**

Project/Site & Scope Nyngan Solar Power Station - Construction Phase		Revision No. 1.1		
Project No. OFSC 1052		Internal Ref: 1		
Prepared by: (*Note only First Solar employees that have been trained in the First Solar Risk Management Training Module are permitted to complete an assessment.)				
Name:	Position:	Date of Risk Mgt Training*		
Beresford Tuppin	National HSE Manager	13-Jun-14		
Bruce Smith	Project Director (Australia)	23-Jun-14		
Michael Law	Construction Manager - Nyngan Power Station	13-Jun-14		
Reviewed and approved by:				
Beresford Tuppin	Signature: 	Position: National HSE Manager		
Date Risk Assessment prepared: December 2013		Date work to be commenced: January 2014		
Actions before work commences: N/A				
Schedule Review Date	Review Completed By	Date Completed	PM Signature	Revision No.
January-14	S. Street 	23-01-14		
April-14				
July-14	B.Tuppin 	30-07-14		
October-14	B.Tuppin 	30-10-14		
January-15	B.Tuppin 	11-01-15		
April-15				
July-15				

	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	<p>HCP02: Mobile Plant</p> <p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 	Site Supervisor	4	Critical	VU	Very Unlikely	M	Medium	<p>Action 1: Establish a procedure / protocol for field based refuelling activities Responsibility: Con Catsicas</p> <p>Action 2: Establish a protocol for "RED ZONE" where mobile plant is operating Responsibility: Moran Stark</p>	
8												<ul style="list-style-type: none"> - Mobile plant fitted with warning devices such as flashing lights and audible alarm for reversing plant - Project induction to include Plant Safety module (Plant specific blind spot buffer zones defined) - Where spotters are absolutely necessary they must be specifically trained and deemed competent 									
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 suppression) Speeding	LV / buggy Crushed Resulting in Fatality; Plant / Vehicular damage	4	Critical	L	Likely	H	High	<p>HCP 02: Mobile Plant</p> <p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	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								
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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. <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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
16																					
17																					
18												<p>Excavators & Earthmoving Machinery</p> <ul style="list-style-type: none"> - 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. 									

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating							
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 remote 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	
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 inadvertent 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 faulty equipment is to be tagged 'out of service' and quarantined or remove from site - JHA/SWMS or SOP for all power and hand tools - PSPP 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 Finch points Finch point during rigging/lifting Receiving goods - unpacking	Medical attention, minor injury	2	Moderate	L	Likely	M	Medium	ABOVE THE LINE CONTROLS - Plant Risk Assesments 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	

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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating							
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	<p>ABOVE THE LINE CONTROL</p> <ul style="list-style-type: none"> - Arrange for a qualified Occupational Hygienist to conduct a survey of the Nyngan Solar Power Station site upon commencement of construction - Hazardous Chemicals Risk Assessment when procuring any item considered hazardous and/or dangerous - wherever possible substitute hazardous chemicals (e.g. substituting high hazard chemicals like carcinogens, mutagen, reproductive toxicants and sensitizers) 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 <p>BELOW THE LINE CONTROL</p> <ul style="list-style-type: none"> - 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 practitioner. - 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 response 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
51																				
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Segregated areas established when lasers are in use on the project - Welding activities area to be delineated where possible (e.g. through establishing a dedicated welding / hot works bay on the project site) <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	

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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating							
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	Site Supervisor
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	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	

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating																
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 prominent 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		

	C	D	E	F	G	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating							
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Signs denoting access to the area is restricted clearly visible around the perimeter. - Principal Constructor Signage with emergency contact details displayed in prominent 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	<p>SMP: 12 Selection & Management of Contractors</p> <p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Pre-qualification process - Tender evaluation process - Pre-award alignment meeting with preferred Contractor - Pre-mobilisation workshop (kick-off meeting) <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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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3						Consequ-ence	Likelihood	Rating			Severity	Likelihood	Rating							
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Bundled fuel storage areas - Bundled oil storage areas - Self contained secondary storage tanks - Self bundled 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 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 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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Water testing program in place - Water filtration systems fitted to taps - Water Cooler units installed with drinking water supplied <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Captured in the Environmental 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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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: <ul style="list-style-type: none"> * 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	

	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								
62	42	Waste Management	All stages of the project	Waste management requirements not clearly identified and planned for	Hygiene - causing illness Visual - community perception & Loss of reputation, Attract vermin Complaints relating to waste management	3	Major	L	Likely	H	High	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Approved site environmental management plan (Waste Management). The plan will address the waste management hierarchy: <ul style="list-style-type: none"> * Waste avoidance * Waste reuse * Waste recycling * Energy recovery * Waste disposal - Waste management requirements included in impacts and aspects register <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 	Site Supervisor	3	Major	U	Unlikely	M	Medium		
63												<ul style="list-style-type: none"> - 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). 									
64	43	Heritage Items	General Earthworks & Prep works for access rds, Lay-Down Areas, Site Sheds, Car Parks, construction area etc Tree Cutting and Vegetation Removal Access Road & Internal Road Construction (incl. drainage) Construction of site offices Excavate, place, electrical (and other) services when installing site sheds / offices Trenching and installation of cabling	Inadequate consultation with traditional owners/indigenous community prior to commencing operations	Complaints, delays and Loss of reputation	3	Major	V U	Very Unlikely	3	Medium	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Heritage assessment completed prior to commencing construction <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Project induction to include a process for managing the identification of suspected or actual heritage items - If heritage or suspected 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	V U	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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Regulated work periods - eg: 7:00am to 6:00pm Monday to Friday <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	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							
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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 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 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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - Site survey to be conducted prior to construction commencing <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 their removal <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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	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 PCS Explosion of stored chemicals	Injury or death Asset damage Spillage onto ground and emissions to air Loss of fluids	5 Catastrophic		1	Very Unlikely	H	High	<p>ABOVE THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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 <p>BELOW THE LINE CONTROLS</p> <ul style="list-style-type: none"> - 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

How severely could it hurt someone or how ill could it make someone?	How likely is it to occur?		
	Very Likely (VL)	Likely (L)	Unlikely (U)
	Could happen any time	Could happen sometime	Could happen but very rarely
Critical: Fatal or permanent disability	H	H	H
Major: Long term illness or serious injury	H	H	M
Moderate: Medical attention and several days off work	H	M	M
Minor: First aid needed	M	M	L

Very unlikely (VU)
Could happen, but probably never will
M
M
L
L

Minor Extremely Unlikely	Low
Minor Very Unlikely	Low
Minor Unlikely	Tolerable
Minor Improbable	Tolerable
Minor Probable	Tolerable if ALARP
Significant Extremely Unlikely	Low
Significant Very Unlikely	Tolerable
Significant Unlikely	Tolerable
Significant Improbable	Tolerable if ALARP
Significant Probable	Tolerable if ALARP
Severe Extremely Unlikely	Tolerable
Severe Very Unlikely	Tolerable
Severe Unlikely	Tolerable if ALARP
Severe Improbable	Tolerable if ALARP
Severe Probable	High - Intolerable
Major Extremely Unlikely	Tolerable
Major Very Unlikely	Tolerable if ALARP
Major Unlikely	High - Intolerable
Major Improbable	High - Intolerable
Major Probable	High - Intolerable
Catastrophic Extremely Unlikely	Tolerable if ALARP
Catastrophic Very Unlikely	Tolerable if ALARP
Catastrophic Unlikely	High - Intolerable
Catastrophic Improbable	High - Intolerable
Catastrophic Possible	High - Intolerable