




Sustainable Bright – Risk Assessment

Reference	RA08-SB-PV Solar Park – V1
Site /Work Location:	PV Solar Park – (North Yorkshire)
Assessment For:	Installation of PV Panels and connecting to Strings Cables
Who is at Risk:	Sustainable Bright Employees and Sub-Contractors

EXAMPLE

Hazard	Risk	Assessment			Control Measures	Residual Risk Rating		
		L	S	(RR) Score		L	S	RR
<p>Operators working from C30R Yanmar (Unimat) platform to install PV Panels</p> 	<p>Panel installers falling from platform (1-2m) when Unimat is stationary. Panel installers falling from platform (1-2m) when Unimat is relocating. Unimat striking installed frames. Operators being trapped between Unimat and installed frames. Unimat operator operating tipping mechanism causing platform to tipping injuring Panel installers. Possible panel installers feet crushed by Unimat track</p>	4	4	(H) 16	<ul style="list-style-type: none"> Minimum Fixed Guarding¹ must be in line with WAHR 2005 and BS13374:2004 (using tubular scaffold poles) fixed around the platform of the Unimat to prevent panel installers falling. Panel installers will not climb on guard rails Panel installers will use a class 1 or EN 131 ladder to access/egress the Unimat platform. <ul style="list-style-type: none"> Engine of the Unimat machine will be switched off while embarking/disembarking taking place Unimat operator will ensure the tipping operation of the Unimat is isolated or facility to prevent operation whilst Panel installers are on the platform Unimat operator can turn and maintain eye contact with Panel installers at all times Unimat operator turns off engine of the Unimat machine while PV installers undertake installation Panel installers will fit top PV panels onto frames from platform using impact tools, waste materials to be collected as Panels are installed <ul style="list-style-type: none"> Advisable for heavy hand tools to be attached via lanyard to prevent risk of dropping No use of electrical tools or electrical extension leads on the Unimat platform Unimat operator will not move the Unimat machine unless PV installers are safely within the guarding perimeter and holding onto guard rail. Panels can be reloaded onto the platform with assistance of an operator and a telehandler, to reduce the manual handling operations Refuelling of the Unimat must take place with the Panel installers disembarked from the platform Unimat operator and Panel installers will undertake Tool box talk to ensure all are aware of the safe working instructions of using the Unimat platform to install PV panels to the installed frame 	2	4	(L) 8

¹ **Minimum Fixed Guarding: The height of the upper guard rail must meet WAHR 2005 and the BS EN 13374: 2004 requirements.** The overriding requirement is that the guard rail should be suitable and sufficient to prevent a person or object falling, so far as is reasonably practicable. As a guide, aim for the top guard rail height of 950- 1000mm and a maximum gap of around 470 - 500mm, in normal circumstances this would be seen as sufficient by HSE inspectors. For construction activity the top guardrail must be at least 950mm, this is in line with the requirements of the European Temporary Working at Height Directive which stipulates guardrail height in construction as 1000mm + or – 50mm. Therefore the requirements of the WAHR and the BS EN are not inconsistent but set out the requirements in a slightly different way. The standard can be set at a particular height, but the Regulations must reflect the margins recognized throughout Europe.



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PV Panels Manual Handled from Box and Packaging and fixed to mounting frame	WRULD's Cuts, Grazes and Bruises	2	3	(L) 6	<ul style="list-style-type: none"> Operators use closed blade (safety) knife to cut strapping and remove shrink wrap from box Internal packing removed and placed inside the box and within waste bags strategically placed around the site PV panel removed and inspected for damage All packaging is segregated and placed within the correct waste stream Manually handling of loads to be avoided where possible by using machinery particularly for distribution of the panels. Where unavoidable, no-one is to carry anything more than they are comfortable with and never more than 20kg. Panels are to be lifted by 2 persons onto mounting frame. Mechanical means available (Bobcat) to move heavy and multiple loads Kinetic lifting techniques adopted, the load must be minimal (max one steel at a time) Using impact drivers the operators hold the panel and fixe the panel to the frame. The operator ensures PV panel cable is free close to the string cable, when PV panel is fixed correctly to the mounting frame the Panel cable is plugged into the correct string cable 	1	3	(VL) 3
Manual Handling of Steel framework/fixtures and fittings	Sprains or strains due to handling of Steel uprights, Pearling's, framework, string boxes, cable reels, Solar panels and other associated loads. Operators preparing steel for fixing to Piles Hand injuries due to handling of panels.	2	3	(L) 6	<ul style="list-style-type: none"> Manually handling of loads to be avoided where possible by using machinery particularly for distribution of the panels. Where unavoidable, no-one is to carry anything more than they are comfortable with and never more than 20kg. Panels lifted by 2 persons. Mechanical means available (Bobcat) to move heavy and multiple loads Kinetic lifting techniques adopted, the load must be minimal (max one steel at a time) Operators share the task of collecting steel upright prior to ramming to reduce the repetitive task Gloves to be worn when handling panels. 	1	3	(VL) 3
Noise and Vibration	Operators exposed to excessive noise from impact tools and metal to metal contact Operators exposed to excessive vibration from impact tools	3	4	(M) 12	<ul style="list-style-type: none"> Operators involved in noisy operations issued with correct PPE (EN352) Ear plugs (EN352-2) supplied to peripheral workers who may be affected by the noisy operations All impact hand tools will be checked to ensure the ELV is 2.5 m/s-2 or more for an 8 hour day Operators affected by noise and vibration are subject to Occupational Health Monitoring 	1	4	(VL) 4
Moving Pallet/Boxed PV Panels	Operators hit by vehicle Pallet falls from vehicle Box is damaged during transit over	3	3	(L) 9	<ul style="list-style-type: none"> All operators must be fully trained/experienced to operate bobcats/telehandlers (CPCS, NPORS etc) 	1	3	(VL) 3



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	site				<ul style="list-style-type: none"> Bobcat/telehandler tested and inspected in line with LOLER and PUWER documentation checked and available on site Where restrictions are apparent banksmen will be used. Bobcat/Telehandler place the palletted box of PV panels at the end of each row to assist in reducing the distance operators unpacking and carrying PV panels for installation Telehandler transport palletted box of PV panels to Unimat to assist in reducing the distance operators unpacking PV panels for installation by the Panel installers using the Unimat platform 			
Using C30R Yanmar Machine on Sloping or uneven ground	Machine tipping or over turning during operation Running over feet when moving machine Crushing operators	3	4	(M) 12	<ul style="list-style-type: none"> C30R Yanmar machine to be positioned downhill of working position Where ground is on excessive camber, excavator will assist in removing soil to allow for machine to be true within position before using C30R Yanmar commences. Stability of the C30R Yanmar machine will be checked prior to each use 	1	4	(VL) 4
Manual Handling of Panels from C30R Yanmar platform	Sprains or strains due to handling of Solar panels and other associated loads.	2	3	(L) 6	<ul style="list-style-type: none"> Where unavoidable, no-one is to carry anything more than they are comfortable with and never more than 20kg. Panels are to be lifted by 2 persons. Kinetic lifting techniques adopted, to be minimal (max one steel at a time) Workers share the task of man handling Panels to reduce the repetitive task Gloves to be worn when handling panels. 	1	3	(VL) 3
Movement and storage of other construction materials	Damage to materials during movement or poor storage. Machine turning over or dropping loads due to excessive weight / overloading/undermining excavations	3	3	(L) 9	<ul style="list-style-type: none"> Suitable size machine will be used to carry loads. Loads will be distributed along the line to reduce the need for excessive movement. Materials to be stored in specific areas as agreed with Site Manager. Storage areas to be fenced off using double clipped Heras fencing. Movement of materials around the site to be carried out by telehandler. 	1	3	(VL) 3
Other Plant movements- Telehandler & Bobcats (Traffic Management)	Contact with other machinery, structures or people Overturning of Mobile Equipment Unauthorised start up and movement Parking of operator/visitor's cars and vehicles Fuel spillages Hydraulic oil leaks and spillages	3	4	(M) 12	<ul style="list-style-type: none"> Only competent persons are to operate any items of mobile plant. Machinery must only be operated in accordance with safety procedures. No-one is to approach any machine until they have made the driver aware of your presence and you get a clear signal to approach. Always be alert to moving plant/equipment and take the view that the driver hasn't seen you. Seat belts to be worn at all times. All machines to have amber flashing lights operating unless otherwise specified by your supervisor. All persons on foot to wear high visibility clothing. Machinery not left unattended, key removed and machine secured. Parking of private cars and contractors vehicles will take place in designated areas. 	1	4	(VL) 4



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Refuelling operations of Excavator/Dumper/ Water pumps	Pollution due to spillage. Health problems due to contact with diesel.	2	3	(L) 6	<ul style="list-style-type: none"> Refuelling will only be undertaken within a designated refuelling point within the staging area – in accordance with Principal Contractor CPP Spillkits will be in place and maintained at the designated refuelling point Refuelling elsewhere on site can only take place with the express permission of the Principal Contractor Site Manager A double skinned fuel tank will be used and placed in an area as designated by the Site Manager. Drip trays will be used during refuelling operations. A suitable sized spill kit will be kept adjacent to fuel tank during refuelling. The fuel tank is to be kept locked at all times when not in use. A CoSHH assessment is to be carried out for the diesel. 	1	3	(VL) 3
Lone Working	Injury or illness without support	3	4	(M) 12	<ul style="list-style-type: none"> All Employees/Contractors briefed on Lone working procedures, including: <ul style="list-style-type: none"> No high risk working when working alone Constant communication with Security/SB Project Team HSE Guidance INDG 73(v3) http://www.hse.gov.uk/pubns/indg73.pdf No visitors/sub-contractors work on site alone 	1	4	(VL) 4
Working in hours of darkness	Injury due to tripping, hidden voids, misjudgement etc. End of summertime hours	3	4	(M) 12	<ul style="list-style-type: none"> Programed hazardous work to take place during daylight hours Access lighting provided by Principal Contractor, task lighting provided by Sustainable Bright. Head torches to be worn by all operatives as required by Principal Contractor site rules. Site housekeeping maintained at high level at all times 	1	4	(VL) 4
Use of Hand tools	Cuts, grazes and bruising to hands Failure of damaged tools Use of incorrect tools	2	3	(L) 6	<ul style="list-style-type: none"> Tool registers must be maintained up to date by Principal Contractor Site Manager Contractors must inspect tools prior to use discard or dispose of damaged or broken tools Correct tools for the correct job every time 	1	3	(VL) 3
Use of Ladders/Step ladders	To gain access/egress into excavations Gain access to high parts of mounting structure	3	3	(L) 9	<ul style="list-style-type: none"> Ladders must be EN131 classification (Old Class II) or Class I classification All ladders must be on the site ladder register Scafftag fitted to ladder in accordance with Principal Contractor CPP Three point contact with step ladders adopted, including knee and body – <ul style="list-style-type: none"> http://www.hse.gov.uk/pubns/indg455.pdf http://www.hse.gov.uk/work-at-height/myths.htm 	1	3	(VL) 3
Working on Sloping or uneven ground	Machine tipping or over turning during operation Running over feet when moving machine Crushing operators	3	4	(M) 12	<ul style="list-style-type: none"> Ladders to be positioned stable ground, Stability of ladders will be checked prior to each use Where ground is on excessive camber, excavator will assist in removing soil to allow for machines to be operating true before work commences Pedestrians have right of way to machines, operators must observe the correct crossing points on site for pedestrians. 	1	4	(VL) 4



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Open excavations	Contractors/trespassers falling into excavations	3	3	(L) 9	<ul style="list-style-type: none"> No person to enter any excavations until an assessment has been carried out by a competent person to establish the stability of the sides and determine whether support is needed for the sides. Physical barriers to be placed where excavations are left open on both sides of the excavation (to prevent accidental falls from Contractors, trespassers and vehicles) Site Manager to agree period of inspections to be undertaken by whom and when based on stability? 	1	3	(VL) 3
Hidden UXO/UXB discovered during surveying	Explosion Damage to Site Plant Major Injury/Death	4	4	(M) 16	<ul style="list-style-type: none"> Desk top UXO ordinance Survey carried out June 2016 by Fellowes (<i>No known hazards identified, however contingency plans are in place should a discovery of an unknown object be apparent</i>) <ul style="list-style-type: none"> Preliminary UXO risk assessment Ref: 6 Alpha Project No P5094 available via dropbox Contingency procedures communicated to all Contractors during Induction by Principal Contractor Site Manager and Principal Contractor Project Manager of actions to take if unidentified objects are discovered during excavations 	1	4	(VL) 4
Interaction with insects, reptiles and wild animals	Bites & Stings Leptospirosis Bleeding and cuts Infection and Reaction	2	4	(L) 6	<ul style="list-style-type: none"> Employees and Contractors made aware of the possible insects, reptiles and wild animals within UK that could be found on site Employees and Contractors briefed to be aware of the risks of Leptospirosis (<i>Wields Disease</i>) and the symptoms Full mandatory PPE worn at all times (<i>Minimum Hard Hat, Hi Vis waistcoat and Safety Boots</i>) First Aid Provisions available on site 	1	3	(VL) 3
Interaction with reptiles or amphibians (Planning Consent)	Harming or disturbing roaming reptiles or amphibians Contaminating the land or water courses Disturbing feeding or breeding areas	4	4	(H) 16	<ul style="list-style-type: none"> Principal Contractor and Sustainable Bright Site Manager ensure clear details of no go and exclusion areas are clearly marked on site. All Contractors and sub-contractors are instructed during induction of no go and exclusion zones No Go and exclusion zones are checked daily by either Principal Contractor and Sustainable Bright Site Manager ensure controls are maintained 	1	4	(VL) 4
Hypothermia or Hyperthermia	Contractors suffering for effects of coldness Contractors and sub-contractors suffering for effects of heat exposure	3	3	(L) 9	<ul style="list-style-type: none"> Contractors briefed as to the requirements of correct clothing as weather moves from summer to winter Drying room facilities provided & First Aid arrangements available Contractors briefed as to the requirements of correct clothing as weather moves from Spring to Summer Potable water provided & First Aid arrangements available Correct clothing must be worn 	1	3	(VL) 3
Dog and cat faeces (Toxocara canis)	Toxocariasis Loss of sight,	4	4	(H) 16	<ul style="list-style-type: none"> Full mandatory PPE worn Full site induction Toxocariasis risks are communicated 	1	4	(VL)



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<i>(Toxocara cati)</i>	ill health				<ul style="list-style-type: none"> ○ Be aware strict PPE protocols must be adhered to. ○ Wash hands thoroughly before eating, smoking etc ○ Employees and Contractors reporting of any ill health to First Aid and Sustainable Bright Project Team 			4
Stress	Contractors under tight deadlines to complete the works Poor or incorrect communication and instruction Wrong tools for the job	3	3	(L) 9	<ul style="list-style-type: none"> • Deadlines are clear and Contractors allowed adequate time to prepare in line with program • Project managers ensure the correct work equipment/information is available to undertake the task • Work supervised effectively in a professional manner • Adequate breaks are provided • Workers/Contractors briefed correctly on all tasks 	1	3	(VL) 3

OVERALL Risk Involved with NO Control Measures in Place		RR
Likelihood (L)	Severity (S)	(H)
1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5 <input type="checkbox"/>	16

OVERALL Risk Involved with FULL Control Measures in Place		RR
Likelihood (L)	Severity (S)	(L)
1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" type="checkbox"/> 5 <input type="checkbox"/>	8

PPE Category									Other PPE Requirements
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PPE available at all times by Principal Contractor Site Manager
Specific Type	EN 397	EN 166F			EN388	EN 149 P1			



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DETAILS OF FURTHER CONTROL MEASURES

Planning, Procedures & Documents etc.	PV Solar Site PCI & CPP ♦ HSG144 – Construction Site Traffic. Site Distribution plans Control of Vibration exposure to operators INDG175 (Utilise Vibration Calculator), Control of Noise exposure to operators, Provision and Use of Work Equipment Regulations (PUWER), INDG402 Safe Use of ladders and step ladders, INDG229(rev1) HSE Using Work Equipment Safely, HSG 47 (HSE); Avoiding Danger from underground services INDG398 HSE – Are you making the best use of lifting and handling aids, HSG107 (HSE) – Maintaining Portable and Transportable Electrical Equipment HSG141 (HSE) - Electrical safety on Construction sites, INDG227 (HSE) – Safe Working with Flammable Substances LOLER ACOPS L113, INDG 422 Thorough Examination of Lifting Equipment HSG168 (HSE) – Fire Safety on Construction Sites, Guidance Notice GS6 - Avoidance of danger from overhead electric power lines HSG17 – Use of Abrasive wheels , Control of Vibration exposure to operators INDG175 (Utilise Vibration Calculator), Control of Noise exposure to operators, WAHR 2005 and BS13374:2004 requirements to ensure guard rails on Unimat are installed correctly IET Code of Practice for Grid Connected Solar PV Systems				
Supervision	Sustainable Bright Project Manager to confirm method statement Principal Contractor Site Manager will manager or delegate supervision: Employees and Contractors will sign in and sign out when entering/leaving site All PV Panel mounting, Monitoring breakages of PV Panels, Movement of all materials related to this task, Rotating jobs that place operators at risk due to noise and vibration. Unimat must only be refuelled with Panel installers disembarked				
COSHH Reference	(PV Solar Site) Diesel - SB-HSE-Form-18 - COSHH Assessment v1.0 (PV Solar Site) Hammerite Direct to Gal Steel Paint - SB-HSE-Form-18 - COSHH Assessment v1.0				
Review Trigger	Performing the task with heavy rain Where high risk operations may affect constructing PV Panel mounting installations				
First Aid Box		First Aid Box located within the PV Solar Site Site Office. All accidents and injuries are recorded in the site Log Book. Accidents must also be reported to the Sustainable Bright Project Team and Principal Contractor in accordance with CPP/PCI Pontefract A&E – Friarwood Lane WF8 1PL Tel: 08456 060247/08448 118110	<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Name of First Aider</td> <td>Principal Contractor Site Manager</td> </tr> </table>	Name of First Aider	Principal Contractor Site Manager
Name of First Aider	Principal Contractor Site Manager				
Emergency Procedures – Emergency Telephone 999					
On Hearing the Alarm	Evacuate Immediately - (Continuous sound horn or verbal instruction)				
On Discovering a Fire	Raise the Alarm - Evacuate the Site, Only if it is safe to do so – attempt to extinguish the fire, Alert the Fire Service giving Details of Location Fire has been discovered PV Solar Site North Yorkshire, DN14 – ensure they repeat the message before hanging up'				
Principal Contractor Site Manager / Sustainable Bright Review			Yes		
Does this Risk Assessment adequately cover all the risks present for the work to be undertaken at PV Solar Solar Park?			No		
Does this Risk Assessment adequately cover all the risks present for the work to be undertaken at PV Solar Solar Park?			Unsure		
If no or unsure contact Sustainable Bright Project Manager (Roxana Oprisoreanu Mobile UK: +44785 241 97 24 Mobile RO: +40757 614 013) to request an immediate detailed review					
Print Name		Signature	Date		



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Risk Rating				
Very Low	Low	Medium	High	Very High
1 - 4	5 -9	10 - 15	16 - 20	20 - 25
Risk Rating = Severity (S) x Likelihood (L)				

The risk assessment matrix below (TABLE 1) should be used to calculate the risk level (Likelihood x Severity). Consideration may also be given to property damage or business risk; this can be added to the severity section as appropriate. Once the risk has been calculated the priority for action can be set from TABLE 2.

TABLE 1:		Likelihood = L				
		Certain (5)	Very Likely (4)	Likely (3)	May happen (2)	Unlikely (1)
Severity = S	Death (5)	25	20	15	10	5
	Major Injury; severe property damage (4)	20	16	12	8	4
	Up to 3 day injury (3)	15	12	9	6	3
	Minor Injury (treatment off site); minor property damage (2)	10	8	6	4	2
	Minor Injury (First Aid treatment on site) (1)	5	4	3	2	1

TABLE 2:		
Score	Risk Rating	Action
1-4	VL	No Action is required as the risk is as low as reasonably practicable or any further change would/could have negligible affect on the risk
5-9	L	Action is required to reduce the risk, although low priority. Time/effort/cost should be proportional to risk.
10-15	M	Action required soon to control the risks. Interim measures may be necessary in the short term.
15-20	H	Stop Work - Action required urgently to control the risks. Further resources may be needed.
20-25	VH	Immediate Action



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EXAMPLE

2. OPERATOR/ SUB –CONTRACTOR ACKNOWLEDGEMENT

All Employees and Contractors, Contractors and Sub-Contractors that will undertake work related to this Risk Assessment at ‘**PV Solar Site**’ Solar Park and must sign to acknowledge that they have read the contents and will agree to work in accordance with all the detailed control measures here within.

Contractors / Sub-Contractors Name	Contractors/Sub-Contractors Signature	Company	Date of Signature