



C&C CONSTRUCTION SERVICES

Risk Assessment

RA Number	001 rev 2
Date:	12/09/15
Supervisor Name:	John Cassidy
Prepared By:	Trevor McMillan

Job Description

General mobile crane operations onsite

Risk Assessment Team Members

John Cassidy, Stacey Cassidy, Trevor McMillan

Hazardous Situations to Consider

1. Can anyone be struck by or come into contact with anything?
2. Can anyone be caught in, on, under, against or between something?
3. Can anyone slip, trip or fall?
4. Can anyone be exposed to environmental hazards? (E.g. Fumes, lack of oxygen, noise, temperature extremes, dust, vibrations, radiation, chemicals)
5. Can anyone be exposed to physical limitations? (E.g. Not enough space, lack of access to tools fit for purpose, uncomfortable work position, repetitive bending)
6. Is anyone at risk from other work crews working above or below you?
7. Have all possible dropped object controls been put in place?
8. Is any environmental damage possible?
9. Is any property or equipment damage likely?
10. Are all edges protected?

Risk Assessment Approval

Plant Identification and Description – Mobile Crane Operations

Name

Date of Risk Assessment

Trevor McMillan

12th September 2015



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RISK RANKING MATRIX

Consequence Likelihood	1-Minor	2-Medium	3-Serious	4-Major	5-Catastrophic
A-Almost certain	Moderate	High	Critical	Critical	Critical
B-Likely	Moderate	High	High	Critical	Critical
C-Possible	Low	Moderate	High	Critical	Critical
D-Unlikely	Low	Low	Moderate	High	Critical
E-Rare	Low	Low	Moderate	High	High

Rating	Class	Risk management response
Critical	Class IV	Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention.
High	Class III	Risks that exceed the risk acceptance threshold and require proactive management. Includes risks for which proactive actions have been taken, but further risk reduction is impracticable. However active monitoring is required and the latter requires the signoff by Business Unit senior management.
Moderate	Class II	Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further.
Low	Class I	Risks that are below the risk acceptance threshold and do not require active management. Certain risks could require additional monitoring.

Likelihood	Likelihood description	Frequency	Substance Exposure
ALMOST CERTAIN	Recurring event during the life-time of an operation / project	Occurs more than twice per year	Frequent (daily) exposure at > 10 x OEL
LIKELY	Event that may occur frequently during the life-time of an operation / project	Typically occurs once or twice per year	Frequent (daily) exposure at > OEL
POSSIBLE	Event that may occur during the life-time of an operation / project	Typically occurs in 1-10 years	Frequent (daily) exposure at > 50% of OEL Infrequent exposure at > OEL
UNLIKELY	Event that is unlikely to occur during the life-time of an operation / project	Typically occurs in 10-100 years	Frequent (daily) exposure at > 10% of OEL Infrequent exposure at > 50% of OEL
RARE	Event that is very unlikely to occur during the life-time of an operation / project	Greater than 100 year event	Frequent (daily) exposure at < 10% of OEL Infrequent exposure at > 10% of OEL



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Consequence	MINOR	MEDIUM	SERIOUS	MAJOR	CATASTROPHIC
Non-Economic (Social and Environmental)					
HEALTH	Reversible health effects of little concern, requiring first aid treatment at most. Can include minor irritations of eyes, throat, nose and or skin, or minor unaccustomed muscular discomfort.	Reversible health effects of concern that would typically result in medical treatment. Can include temperature effects; travel effects; stress; and sunburn.	Severe, reversible health effects of concern that would typically result in a lost time illness. Can include acute / short-term effects associated with extreme temperature effects; or musculo-skeletal effects; vibration effects; nervous system effects; some infectious diseases; and non falciparum malaria.	Single fatality or irreversible health effects or disabling illness. Can include effects of suspected carcinogens, mutagens, teratogens and reproductive toxicants, progressive chronic conditions and/or acute / short-term high-risk effects	Multiple fatalities or serious disabling illness to multiple people. Can include effects of known human carcinogens, mutagens, teratogens and reproductive toxicants, and life-threatening respiratory sensitization and falciparum malaria
SAFETY	Low level short term subjective inconvenience or symptoms. Typically a first aid and no medical treatment.	Reversible injuries requiring treatment, but does not lead to restricted duties. Typically a medical treatment.	Reversible injury or moderate irreversible damage or impairment to one or more persons. Typically a lost time injury.	Single fatality and/or severe irreversible damage or severe impairment to one or more persons.	Multiple fatalities or permanent damage to multiple people.
ENVIRONMENT (on site)	Near-source confined and promptly reversible impact (Typically a shift)	Near-source confined and short-term reversible impact (Typically a week)	Near-source confined and medium-term recovery impact (Typically a month)	Impact that is unconfined and requiring long-term recovery, leaving residual damage (Typically years)	Impact that is widespread-unconfined and requiring long-term recovery, leaving major residual damage (Typically years)
ENVIRONMENT (off site)	Not applicable	Near-source confined and promptly reversible impact (Typically a shift)	Near-source confined and short-term reversible impact (Typically a week)	Near-source confined and medium-term recovery impact (Typically a month)	Impact that is unconfined and requiring long-term recovery, leaving residual damage (Typically years)
COMMUNITY (community trust)	Tangible expressions of trust / mistrust amongst a handful of community members with no influence on public opinion and decision-makers.	Tangible expressions of trust / mistrust amongst a few community members with some influence on public opinion and decision-makers.	Tangible expressions of trust / mistrust amongst some community members with moderate influence on public opinion and decision-makers.	Tangible expressions of trust / mistrust amongst most community members with significant influence on decision-makers.	Widespread loss / gain of trust across the community setting the agenda for decision makers and key stakeholders.
COMMUNITY (stakeholder relationship)	Key stakeholder(s) express support / dissatisfaction informally.	Key stakeholder(s) express support / dissatisfaction formally.	Key stakeholder(s) threaten to oppose or disengage / strengthen offers to support or engage.	Key stakeholder(s) actively oppose or actively refuse to engage / actively support and engage.	Key stakeholder(s) oppose and actively get others to oppose / engaged and actively get others to support.
COMMUNITY (cultural heritage)	Reparable damage to site or item of low cultural significance occurs/avoided.	Irreparable damage to site or item of low cultural significance occurs/avoided.	Reparable damage to site or item of cultural significance occurs/avoided.	Irreparable damage to site or item of cultural significance occurs/avoided.	Irreparable damage to site or item of international cultural significance occurs/avoided.
REPUTATION	Community complaint resolved via existing site procedures. Impact on reputation of several work areas within an operation. One off public exposure in local media, word of mouth or local mythologies.	Impact on reputation of Business Unit. Significant public exposure in local media.	Impact on reputation of Product Group. Comment from national NGO which impacts credibility with neighbours/regional government. Public exposure in national media.	Impact on reputation of Rio Tinto Group. Comment from international NGO. Public exposure in international media.	Severe impact on reputation of Rio Tinto Group. Severe prolonged comment from international NGO. Greater than three years public exposure in international media.
CONFORMANCE / COMPLIANCE	Non-conformance with internal requirement with very low potential for impact. Non-compliance with external / community commitment goes unnoticed by external party/parties, requiring minimal effort to correct.	Non-compliance with external or non conformance with internal requirement with low potential for impact. Non-compliance with community commitment, requiring limited effort to correct.	Non-compliance with external or non conformance with internal requirement with moderate potential for impact. Moderate penalties for breach of legislation, contract, permit or licence. Non-compliance with community commitment reported formally, requiring significant effort to correct.	Breach of licences, legislation, regulation or repeated non-compliance with high potential for prosecution. Breach of contract with significant penalty clauses imposed. Systemic non-conformance with Rio Tinto work cycles or standards with high potential for impact.	Suspended or severely reduced operations imposed by regulators. Breach of community commitment results in direct loss of established consents with widespread secondary effects.
Economic Consequence types (Operational)					
Capital Costs	< 1.6%	1.6% - 5%	5% - 10%	10% - 30%	> 30%
Schedule	< 2.5%	2.5% - 7.5%	7.5% - 15%	15% - 45%	> 45%
Operation & Maintenance Costs	< 0.6%	0.6% - 2.5%	2.5% - 7.5%	7.5% - 15%	> 15%
Production Volumes	< 0.6%	0.6% - 2.5%	2.5% - 7.5%	7.5% - 15%	> 15%
Business Unit Revenue	< 0.25%	0.25% - 1%	1% - 3.5%	3.5% - 7%	> 7%



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		C	L	RR		C	L	RR	
Entanglement									
Moving and operating parts of plant	Accessing engine bay during repair or maintenance Operating of boom	3	B	H	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Crushing									
Falling Parts	Unsecured loads or objects Placement of loads Slings and guiding of loads	3	A	C	Ensure FOPS is in place and free from defect. Prevent access by person and plant to loadshifting area. No lifting of loads over person or plant at anytime. Only competent persons to operate, repair or maintain plant. Dogger to sling and guide loads. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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		U	L	RR		U	L	RR	
Uncontrolled or unexpected movement	Brake or hydraulics or hydraulics failure Crane incorrectly stood or shutdown/started	3	A	C	Plant to be operated as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Plant stability	Crane on uneven or unstable ground Incorrect lifting of loads	3	A	C	Plant to be operated as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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		U	L	RR		U	L	RR	
Collapse of plant	Crane on uneven or unstable ground Incorrect lifting of loads	3	A	C	Plant to be operated as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Being thrown off or under plant	Riding in non-passenger areas of crane Failure to use seatbelts etc	3	A	C	"No seat – no ride". Use of safety equipment such as seatbelts wherever provided. Adhere to signed speed limits. Site rules for operating and parking. SOP's, SWMS's and Take 5. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Entrapment between plant and other object	Personnel working in the vicinity of crane	3	A	C	Barriers to be installed between plant and pedestrian areas. Maintain clearance zone around moving and operating or operating plant. Use of safety observer to move or reverse crane in proximity to persons. Adhere to signed speed limits. SWL's to be clearly marked on crane. Site rules for operating and parking. SOP's, SWMS's & Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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Cutting, Stabbing and Puncturing									
Sharp of flying objects	Objects thrown by moving and operating parts of crane	3	A	C	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Ejection of objects	Unsecured loads or objects Placement of loads	3	A	C	Ensure FOPS is in place and free from defect. Prevent access by person and plant to loadshifting area. No lifting of loads over person or plant at anytime. Only competent persons to operate, repair or maintain plant. Dogger to sling and guide loads. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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		U	L	RR		U	L	RR	
Mobility of plant	Brake or hydraulics failure Crane operated or parked on uneven or unstable ground	3	A	C	Crane to be serviced and maintained as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Uncontrolled or unexpected movement	Brake or hydraulics failure Crane incorrectly stood or shut down/started	3	A	C	Plant to be operated as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Shearing									



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		U	L	RR		U	L	RR	
Between plant parts	Accessing engine bay during repair or maintenance Operating of boom	3	A	C	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Between plant and object	Personnel working in the vicinity of crane	3	A	C	Barriers to be installed between plant and pedestrian areas. Maintain clearance zone around moving and operating or operating plant. Use of safety observer to move or reverse crane in proximity to persons. Adhere to signed speed limits. SWL's to be clearly marked on crane. Site rules for operating and parking. SOP's, SWMS's & Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Friction and Abrasion									



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		U	L	RR		U	L	RR	
Between plant parts	Accessing engine bay during repair or maintenance Operating of boom Burns to body parts	3	A	C	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect. Let crane cool down prior to working on it.	3	D	M	Project Manager Supervisor Operators
Between plant and object	Personnel working in the vicinity of crane	3	A	C	Barriers to be installed between plant and pedestrian areas. Maintain clearance zone around moving and operating or operating plant. Use of safety observer to move or reverse crane in proximity to persons. Adhere to signed speed limits. SWL's to be clearly marked on crane. Site rules for operating and parking. SOP's, SWMS's & Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Striking									



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		C	L	RR		C	L	RR	
Uncontrolled or unexpected movement	Brake or hydraulics failure Crane incorrectly stood or shut down/started	3	A	C	Plant to be operated as per suppliers and manufacturers instruction. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. Only competent persons to operate, repair or maintain plant. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Ejection of objects	Unsecured loads or objects	3	A	C	Dogger to correctly sling and guide loads. Period check of load when operating for long distances. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Mobility of plant	Brake or hydraulics failure Crane left running in gear when parked Crane on uneven or unstable ground	3	A	C	Barriers to be installed between plant and pedestrian areas. Maintain clearance zone around moving and operating or operating plant. Use of safety observer to move or reverse crane in proximity to persons. Adhere to signed speed limits. SWL's to be clearly marked on crane. Site rules for operating and parking. SOP's, SWMS's & Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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Materials and Substances									
Fluids	Accessing engine bay during repair or maintenance Access to hydraulic lines	2	B	H	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. Purge hydraulic lines prior to disconnecting. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators
Gases, vapours and fumes	Crane operation in enclosed area	2	B	H	Crane to be operated only in well ventilated areas. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators



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Dusts	Operating off-road	2	C	M	Doors and windows to be closed during off-road use or dusty areas. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators
Electrical									
Contact with live parts	Accessing engine bay during repair or maintenance	2	B	H	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators



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Proximity to electrical equipment	Working in proximity to live electrical parts	3	A	C	Adhere to exclusion zones for live electrical equipment. Use of safety observer in proximity to live electrical equipment. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Leads and cables	Accessing engine bay during repair or maintenance	3	A	C	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Equipment and switches	Accessing engine bay during repair or maintenance	2	B	H	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators



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Isolation and lock-out	Accessing engine bay during repair or maintenance	2	B	H	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators
Fire and Explosion									
Of plant	Failure of crane components Crane accident	3	A	C	Cranes to be maintained and serviced as per manufacturer's requirements. Fire extinguishers to be fitted to cranes. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators



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Caused by plant	Failure of crane components Crane accident	3	A	C	Cranes to be maintained and serviced as per manufacturer's requirements. Fire extinguishers to be fitted to cranes. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Slips, Trips and Falls									
Uneven or slippery surfaces	Crane on uneven or unstable ground	2	C	M	Barriers to be installed between plant and pedestrian areas. Avoid operating or parking on uneven or unstable ground. Site rules for operating and parking. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	2	D	L	Project Manager Supervisor Operators



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Housekeeping	Poor site and/or crane housekeeping	2	C	M	Housekeeping and tidiness to be maintained at all times. Site rules for operating and parking. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	2	D	L	Project Manager Supervisor Operators
Obstacles in vicinity	Poor site and/or crane housekeeping	2	C	M	Barriers to be installed between plant and pedestrian areas. Housekeeping and tidiness to be maintained at all times. Site rules for operating and parking. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	2	D	L	Project Manager Supervisor Operators
Access and egress	Poor site and/or crane housekeeping	2	C	M	Barriers to be installed between plant and pedestrian areas. Housekeeping and tidiness to be maintained at all times. Three point contact accessing and egressing cranes. Site rules for operating and parking. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	2	D	L	Project Manager Supervisor Operators



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Work at heights	Access to crane body	3	C	H	No person to be on the crane tray without fall protection, unless crane is fitted with handrails. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators
Ergonomics and Human Factors									
Seating and controls	May affect ability to safely operate crane	2	B	H	Cranes to be serviced and maintained as per manufacturer's instructions. Correct seat adjustment for individual operators. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	2	D	L	Project Manager Supervisor Operators
Human error	Competency in crane operations.	3	A	C	All operators to be verified as being licenced to operate the crane. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	3	D	M	Project Manager Supervisor Operators



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Suffocation									
Atmospheric contamination	Crane operation in enclosed area	3	A	C	Crane to be operated only in well ventilated areas. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Asphyxiation	Crane operation in enclosed area	3	A	C	Crane to be operated only in well ventilated areas. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect.	3	D	M	Project Manager Supervisor Operators
Thermal									



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Hazard Description	Hazardous Situations or Activities	Initial Risk Rating			Risk Treatments	Risk Rating after controls Implemented			Risk Owner
		U	L	RR		U	L	RR	
Hot and cold objects	Accessing engine bay during repair or maintenance Burns to body parts	2	C	M	Only competent persons to operate, repair or maintain plant. Isolation and lock-out procedures. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations. Plant pre-starts and inspections. All guarding to be in place and free of defect. Let crane cool down prior to working on it.	2	D	L	Project Manager Supervisor Operators
Vibration									
Whole body vibration	Exposure to WBV through incorrectly adjusted seating	2	C	M	Correct seat adjustment for individual operators. SOP's, SWMS's and Take 5's. Pre-start meetings and toolbox talks. Positive communications. Task observations.	2	D	L	Project Manager Supervisor Operators



C&C CONSTRUCTION SERVICES

Risk Assessment

RA Number	001 rev 2
Date:	12/09/15
Supervisor Name:	John Cassidy
Prepared By:	Trevor McMillan

RA CHANGES APPROVALS

Date	Step no:	Work Group	Supervisor Approval	
		Name	Name	Signature



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