

All customers
PC88MR-10 Hydraulic Excavator
Serial Number(s) 8313 and up



IMPORTANT NOTE:

Komatsu Australia Pty Ltd (Komatsu) has been requested by the customer to supply this risk assessment report in relation to the specified equipment (the Report). The Report supplements the information provided by Komatsu in the Operation and Maintenance manual (the Manual) and the Report should be read in conjunction with the manual. The Report does not purport to set out all possible risks which might be relevant to the customer's use or operation of the equipment in the report. The Report is provided on a confidential basis for the internal use of the customer only and it is not to be used for any other purpose. The Report does not form part of any contract between Komatsu and the customer and it is not to be relied upon by any other party for any purpose. The customer accepts sole responsibility for the use of the Report. The customer acknowledges that it must carry out its own risk assessment in relation to the equipment in the Report.

Report Information

Customer:	All customers
Machine Model:	PC88MR-10 Hydraulic Excavator
Serial Number(s):	8313 and up
Audit Date:	8/07/2025
Audit Location:	Fairfield NSW
Assessment Team:	Bart Genson, Brad Aikin, Kate Khoshjam, Lachlan Shoebridge, Samantha Ly
Report Date:	25/09/2025
Machine Manual:	PEN01034-06 (Operation and Maintenance Manual)
Engine Manual:	N/A
Machine Safety Options:	• Fire extinguisher inside cabin • Rear camera system • Battery disconnect switch • Guarded rotating LED beacon • Handrails, rung steps, antislip profile/strips • ROPS/OPG • KOMTRAX remote monitoring system

This risk assessment contains 6 main sections:

1. Transportation
2. Access Systems
3. Pre-start Checks
4. Operation
5. Maintenance
6. Emergency Situations

Each of the tasks in section 3 and 5 contain a reference to one or more access systems that are required to be utilised in order to complete the task. In addition to the hazards presented for the task being completed, the reader must consider the hazards of the referenced access systems.

Komatsu Limited (KLTD) conducted a 'Design Risk Assessment' in accordance with Komatsu Engineering Standards (KES) at the development stage of a machine. The KES is referenced from ISO 12100 (Safety of machinery -- General principles for design -- Risk assessment and risk reduction). KLTD follow these guidelines as stipulated by KES and confirm adherence through an internal process of checks and reviews. Due to intellectual property considerations, Komatsu cannot release information relating to KES to third parties. However, the outcome of the design risk assessment has been translated through the Komatsu machine's Operation Maintenance Manual (OMM) and Shop Manual which provide information on the safe operation and maintenance procedures, troubleshooting guide and identification of hazards safety warnings and precautions.

Risk Assessment Matrix

Risks involved in completing tasks on the machine have been assessed using the likelihood and consequences identified during the audit process. The criteria for rating both likelihood and consequence have been extracted from Komatsu Australia's Occupational Health & Safety Policy. Consequences cover personal injury due to completion of routine tasks performed on the machine. It is the customer's responsibility to complete an environmental, financial and fire risk assessment on the machine before placing the machine into operation. The initial risk ratings are calculated with the existing controls detailed for each hazard in place. The residual risk rating is then calculated once the recommended controls have been put in place.

Likelihood

Code	Descriptor	Description
A	Almost certain	Common or repeating occurrence.
B	Likely	Known to occur or has happened.
C	Possible	Could occur and is likely.
D	Unlikely	Could occur but not likely.
E	Rare	May occur only in exceptional circumstances.

Consequence

Code	Descriptor	Description
1	Insignificant	No medical treatment required.
2	Minor	First aid treatment.
3	Moderate	Medical treatment required.
4	Major	Extensive injuries.
5	Catastrophic	Death or permanent disability.

Risk Matrix

Risk Level		Consequence				
		1	2	3	4	5
Likelihood	A	Moderate	High	High	Serious	Serious
	B	Moderate	Moderate	High	Serious	Serious
	C	Low	Moderate	Moderate	High	Serious
	D	Low	Low	Moderate	High	High
	E	Low	Low	Low	Moderate	High

Generic Site Risk Controls

To minimise the risks involved with completing tasks on the machine, there are a number of controls that are recommended to be put in place by the Customer's worksite. These are generic in nature, and should be applied where possible.

Personnel

1. Maintenance personnel hold a valid tradesperson qualification, and deemed as competent to work and authorised by appropriate site supervisors.
2. All personnel inducted with applicable site inductions, along with training in the assigned tasks.
3. Personnel operating or maintaining machinery are fit for work, and not under the influence of drugs or alcohol.
4. Safety discussions and reminders conducted frequently.
5. Refresher training sessions held.

Before Maintenance Work Commences

6. Machine is washed and access systems free of mud and other debris.
7. Machine parked, where practical, on firm, flat and level ground with work equipment lowered to the ground or onto purpose built stands, with wheel chocks installed.
8. Machine has provisions for electrical and hydraulic isolation of circuits, and should be used along with a lock-out and/or tag-out system. Isolation to be tested and confirmed before work commences.
9. Machine allowed to cool for sufficient amount of time before maintenance work commences.
10. Take 5 (or site equivalent) completed before commencement of work. If Take 5 identifies need for Job Safety Analysis (JSA) or Safe Work Method Statement (SWMS), these are to be completed and followed as written.
11. Suitable PPE should be worn when completing tasks on the machines, including long-sleeve high-visibility shirt, long pants, hard hat, eye protection, safety footwear and protective gloves, along with any PPE identified through a Take 5 and/or JSA.
12. Material Safety Data Sheet (MSDS) are available, viewed and relevant precautions taken when handling substances.

During Maintenance Work

13. Proper housekeeping standards are applied at all times, ensuring emergency escape routes are not impeded and fluid spills are cleaned up as soon as possible.
14. Three (3) points of contact are used when mounting or dismounting machines.
15. Service procedures provided in the manual are adhered to, and necessary precautions observed.
16. All tooling used is fit for purpose, and not modified in a manner compromising its integrity.
17. If tasks must be completed with the engine running, one person must remain in the operator's seat to shut-down machine in case of emergency. Positive communication must be maintained between all personnel involved in testing.
18. Work not completed beneath unsecured and/or suspended loads.
19. Personnel working at heights to use suitable fall arrest systems.
20. Permits are sought before entering confined spaces or exclusions zones.

1. Transportation

1.01 Transportation

Hazard: Not assessed - Transportation/site requirements and conditions may vary. Transport company, crane operators and site to complete separate risk assessment.

2. Access System

2. Access System
2.01 Cabin access

Hazard: Slips, trips & falls

Existing Controls: The Manual informs personnel to avoid wearing loose clothing and accessories (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when getting on and off the machine (Section 2 - Safety).
The Manual advises personnel to keep machine clean (Section 2 - Safety).
Handrails and grab rails installed.
Anti-slip floor profile installed.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	2	Low	E	2	Low



Anti-slip floor profile installed.



Rung step at cabin access.

Hazard: Head bumps

Existing Controls: The manual informs personnel of precautions to be observed when getting on and off the machine (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Striking	C	2	Moderate	D	2	Low

2. Access System

2.02 Emergency egress

Hazard: Broken glass

Existing Controls: The Manual informs personnel that the method of emergency egress from the operator's cabin is through the cabin windows utilising the provided escape hammer in the cabin (Section 3 - Operation).

Recommended Additional Controls: Utilise cabin emergency egress by breaking glass only when there is a fire on the machine, or when normal access method is not accessible.
Remove all fragments of glass when egressing through broken window glass.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Cut, stab, puncture	C	2	Moderate	D	2	Low



Location of escape hammer and emergency egress route.

Hazard: Obstructions

Existing Controls: Anti-slip floor profile and anti-slip surfaces.
The Manual informs personnel of precautions to be taken when getting on and off of the machine (Section 2 - Safety).
The Manual advises personnel to keep machine clean (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	3	Moderate	E	3	Low

Hazard: Slips, trips & falls

Existing Controls: The Manual informs personnel to avoid wearing loose clothing and accessories (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when getting on and off the machine (Section 2 - Safety).
The Manual advises personnel to keep machine clean (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	3	Moderate	E	3	Low

2. Access System

2.03 Rear engine bay access/ Battery box access

Hazard: Pinch point

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	C	2	Moderate	D	2	Low

Hazard: Electricity

Existing Controls: Battery disconnect switch installed.
The Manual informs personnel on safety precautions when handling battery (Section 2 - Safety).
Affixed warning decal to battery box covers informs personnel to refer to the manual for safety precautions relating to batteries

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Electric Shock	D	2	Low	E	2	Low



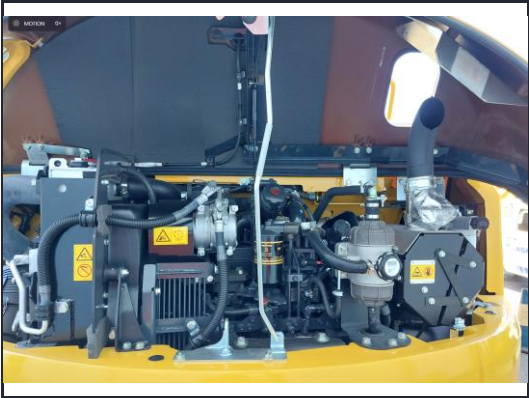
Battery box access

Hazard: Hot components

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high temperature parts (Section 2 - Safety).
Warning decals installed.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	3	Moderate	E	3	Low



Engine components with warning decals.

Hazard: Fans, belts and pulleys

Existing Controls: Battery disconnect switch installed.
Warning decal on engine hood door to advise of rotating parts.
The Manual informs personnel to avoid wearing loose clothing or any accessories (Section 2 - Safety).
The Manual outlines the general precautions that should be taken when near rotating parts (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low
Striking	D	3	Moderate	E	3	Low
Cutting, stabbing	D	3	Moderate	E	3	Low
Entanglement	D	3	Moderate	E	3	Low



Warning decals on engine hood door

2. Access System

2.04 Service bay right access

Hazard: Pinch point

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	C	2	Moderate	D	2	Low

Hazard: Hot components

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high temperature parts (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

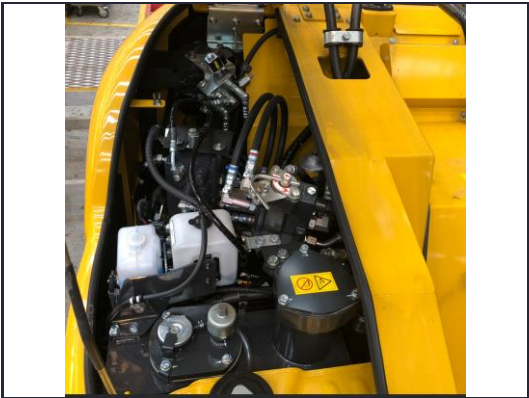
Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	2	Low	E	2	Low

Hazard: Slips, trips & falls

Existing Controls: Rung step and maintenance platform are installed.
Grab rail installed.
The Manual informs personnel to avoid wearing loose clothing and accessories (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when getting on and off the machine (Section 2 - Safety).
The Manual advises personnel to keep machine clean (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

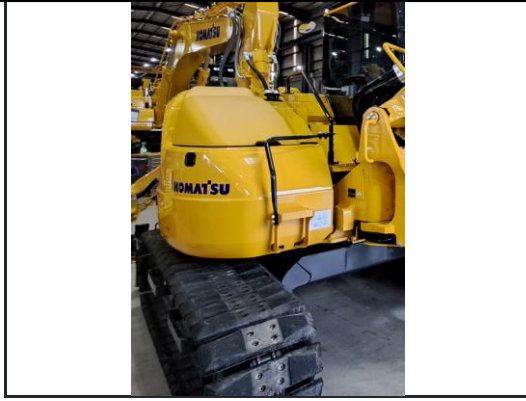
Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	2	Low	E	2	Low



Service bay right access.



Rung step and maintenance platform.



Grabrail installed.

2. Access System

2.06 Work equipment access

Hazard: Head bumps

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Striking	D	3	Moderate	E	3	Low

Hazard: Hot components

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

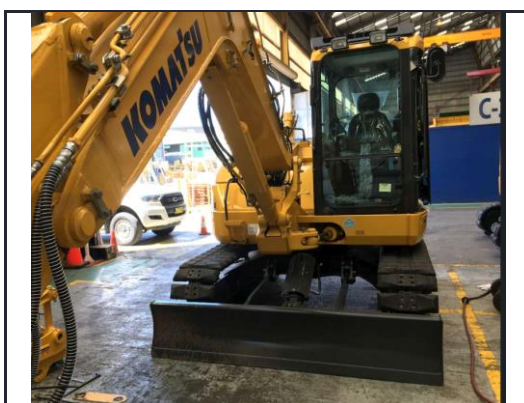
Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	2	Low	E	2	Low

Hazard: Crushing zone

Existing Controls: Battery disconnect switch installed.
The Manual advises personnel not to allow anyone from riding on the work equipment or other attachments (Section 2 - Safety) and to not allow anyone to come close to any rotating or extending/retracting portion (Section 2 - Safety).

Recommended Additional Controls: Follow correct isolation and communication procedures.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low
Striking	D	3	Moderate	E	3	Low
Cutting, stabbing	D	3	Moderate	E	3	Low



Front Blade

2. Access System

2.07 Swing machinery

Hazard: Hot components

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	2	Low	E	2	Low

Hazard: Pressurised fluid

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high pressure oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high pressure fuel (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fluid spray	D	2	Low	E	2	Low

2. Access System

2.08 Under machine/undercarriage access

Hazard: Crushing zone

Existing Controls: Camera system installed.
The Manual advises personnel of precautions to be taken when starting and stopping the machine (Section 3 - Operation).
The Manual advises personnel not to allow anyone from riding on the work equipment or other attachments (Section 2 - Safety) and to not allow anyone to come close to any rotating or extending/retracting portion (Section 2 - Safety).
Affixed warning decal located at the work equipment indicating a hazard of being hit by the working device of the machine and to keep away from machine during operation.

Recommended Additional Controls: Follow correct isolation and communication procedures.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low
Striking	D	3	Moderate	E	3	Low
Shearing	D	3	Moderate	E	3	Low

3. Pre-start Checks

3. Pre-start Checks

3 Walk-around checks

Access System: Cabin access, Rear engine bay access/ Battery box access, Service bay right access, Swing machinery, Under machine/undercarriage access, Work equipment access

Hazard: Hot components

Existing Controls: The Manual advises personnel of precautions to be taken for high temperature parts (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	2	Low	E	2	Low

Hazard: Fans, belts and pulleys

Existing Controls: Battery disconnect switch installed.
The Manual informs personnel to avoid wearing loose clothing or any accessories (Section 2 - Safety).
The Manual outlines the general precautions that should be taken when near rotating parts (Section 2 - Safety).
The Manual informs personnel not to perform maintenance or adjustments whilst engine is running. If engine must be run for certain tasks, one person must be in the operator's seat and able to stop the engine at any time (Section 2 - Safety).

Recommended Additional Controls: Remove guarding only when access is required, and replace guarding after task completion.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	2	Low	E	2	Low
Friction Burn	D	2	Low	E	2	Low
Striking	D	2	Low	E	2	Low
Cutting, stabbing	D	2	Low	E	2	Low

Hazard: Slips, trips & falls

Existing Controls: Rung steps and handrails installed.
Lighting installed to illuminate access system.
Top deck flooring has anti-slip strips installed.
Anti-slip floor profile and anti-slip surfaces.
The Manual informs personnel to avoid wearing loose clothing and accessories (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when getting on and off the machine (Section 2 - Safety).
The Manual advises personnel to keep machine clean (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	3	Moderate	E	3	Low

Hazard: Crushing zone

Existing Controls: Battery disconnect switch installed.
Camera system installed.
The Manual advises personnel of precautions to be taken when starting and stopping the machine (Section 3 - Operation).
Affixed warning decal located at the work equipment indicating a hazard of being hit by the working device of the machine and to keep away from machine during operation.

Recommended Additional Controls: Follow correct isolation and communication procedures.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	2	Low	E	2	Low

Hazard: High dust level

Existing Controls: None.

Recommended Additional Controls: Replace filter of air conditioning elements instead of cleaning.
Ensure cabin doors and windows are shut.
Ensure cabin is kept clean.
Ensure correct PPE is used for the task.
Implement haul road maintenance program.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Respiratory irritation	D	2	Low	E	2	Low

Hazard: Pressurised fluid

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high pressure oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high pressure fuel (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fluid spray	D	2	Low	E	2	Low

Hazard: Electricity

Existing Controls: Battery disconnect switch installed.
The Manual informs personnel on safety precautions when handling battery (Section 2 - Safety).
Affixed warning decal to battery box covers informs personnel to refer to the manual for safety precautions relating to batteries.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

	Initial Risk Assessment			Residual Risk Assessment		
Risk	L	C	Risk Rating	L	C	Risk Rating
Electric Shock	D	2	Low	E	2	Low



Warning decals installed.



LHS service bay/battery box access

Hazard: Hazardous materials

Existing Controls: The Manual informs personnel of precautions to be taken when handling battery electrolyte (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when handling oil, fuel, coolant.

Recommended Additional Controls: Wear gloves and wash hands after completing task.
Material Safety Data Sheet (MSDS) readily available.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Skin irritation	C	2	Moderate	E	2	Low
Explosion	D	2	Low	E	2	Low

Hazard: Tight working area

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Striking	D	2	Low	E	2	Low

Hazard: Fluid spillage

Existing Controls: The Manual advises personnel to dispose of drained fluids as per local legislative guidelines (Section 2 - Safety).

Recommended Additional Controls: Ensure container is of sufficient size to catch drained fluids.
Spill kit available and easily accessible.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	C	2	Moderate	E	2	Low

Hazard: Handling flammable fluid

Existing Controls: The Manual informs personnel of steps to prevent fire from occurring (Section 2 - Safety).
The manual informs personnel of actions to be taken in the event of a fire (Section 2 - Safety).

Recommended Additional Controls: Ensure fire fighting equipment is easily accessible.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fire	D	3	Moderate	E	3	Low

Hazard: Hot fluids

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high temperature oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high temperature coolant (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Scalding	D	2	Low	E	2	Low

4. Machine Operation

4. Operation

4 Operating the machine

Access System: Cabin access

Hazard: High noise level

Existing Controls: Enclosed and sealed cabin.

Recommended Additional Controls: Ensure cabin doors and windows are shut.

Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Hearing discomfort	D	2	Low	E	2	Low

Hazard: High heat level

Existing Controls: Air conditioning system installed.

Recommended Additional Controls: Ensure cabin doors and windows are shut.

Apply sunscreen where necessary.

Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Heat-related illnesses	D	2	Low	E	2	Low

Hazard: High dust level

Existing Controls: None.

Recommended Additional Controls: Replace filter of air conditioning elements instead of cleaning.

Ensure cabin doors and windows are shut.

Ensure cabin is kept clean.

Implement haul road maintenance program.

Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Respiratory irritation	D	2	Low	E	2	Low

Hazard: Machine operation

Existing Controls:	Rearview camera system installed. Mirrors installed. Beacon and work lights installed. The Manual informs personnel to read the Manual and safety labels prior to operation, inspection or maintenance of the machine (Section 2 - Safety). The Manual informs personnel of the method in which to operate the machine (Section 3 - Operation). The Manual informs personnel of precautions to be observed when travelling the machine (Section 2 - Safety). Affixed warning decal inside the operator's cabin informs personnel to sound the horn before travelling the machine. Affixed warning decal inside the operator's cabin on the rear wall informs personnel to read the manual prior to operating the machine. Affixed warning decals informs personnel to keep a safe distance away from the machine during operation.
Recommended Additional Controls:	Ensure operator competency. Ensure Komatsu O&M Manual is available at all times and is read and understood by the operator. Safe operation procedures are provided in The Manual. Complete risk assessment/job safety analysis to be completed. Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Musculoskeletal injuries	D	3	Moderate	E	3	Low
Visibility issues from operator seat (ie. grease & fire bottles)	D	3	Moderate	E	3	Low
Crushing	D	3	Moderate	E	3	Low

Hazard: Electricity (when working around overhead electric cables/power pole)

Existing Controls: Affixed warning decal inside the cabin warns against high voltage cables.

Recommended Additional Controls: Do not travel or operate the machine near electric cables.
Refer to local, council or state regulations in relation to distances and working close to power poles, electric cables etc.
Refer to The Manual for safety precautions.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Electric Shock	C	4	High	E	4	Moderate



In-cabin warning decal

5. Scheduled Maintenance

5. Maintenance - When Required

5.011 Maintenance - When Required

Access System: Cabin access, Rear engine bay access/ Battery box access, Service bay right access, Swing machinery, Under machine/undercarriage access, Work equipment access

Hazard: Pinch point

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	C	2	Moderate	D	2	Low

Hazard: Airborne dust particles

Existing Controls: The Manual informs personnel to wear correct PPE whilst using compressed air for cleaning operations (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Dust inhalation	D	2	Low	E	2	Low

Hazard: Height of service point

Existing Controls: The Manual outlines general safety precautions to be observed for work at high places (Section 2 - Safety).

Recommended Additional Controls: Utilise an elevated work platform (EWP) when performing task. Ensure machine is on level ground. Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Musculoskeletal injuries	D	2	Low	E	2	Low
Slips, trips & falls	D	3	Moderate	E	3	Low

Hazard: Projected dust/fluid/mud

Existing Controls: The Manual informs personnel to wear correct PPE whilst using compressed air for cleaning operations (Section 2 - Safety).

Recommended Additional Controls: Replace filters instead of cleaning them.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Eye injury	D	2	Low	E	2	Low

Hazard: Fluid spillage

Existing Controls: The Manual advises personnel to dispose of drained fluids as per local legislative guidelines (Section 2 - Safety).

Recommended Additional Controls: Ensure container is of sufficient size to catch drained fluids.
Spill kit available and easily accessible.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	C	2	Moderate	E	2	Low

Hazard: Hazardous materials

Existing Controls: The Manual informs personnel of precautions to be taken when handling battery electrolyte (Section 2 - Safety).
The Manual informs personnel of precautions to be taken when handling oil, fuel, coolant (Section 2 - Safety).

Recommended Additional Controls: Wear gloves and wash hands after completing task.
Material Safety Data Sheet (MSDS) readily available.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Explosion	D	2	Low	E	2	Low
Skin irritation	C	2	Moderate	E	2	Low

Hazard: Hot fluids

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high temperature oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high temperature coolant (Section 2 - Safety).
Affixed warning decal to radiator informs personnel of hot coolant, and steps to be taken to prevent coolant from spurting out.
Affixed warning decal to radiator informs personnel of hot water, and steps to be taken to prevent hot water from spurting out.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Scalding	D	2	Low	E	2	Low

Hazard: Pressurised fluid

Existing Controls: Single pole battery isolator installed.
The Manual outlines general safety precautions to be observed when dealing with high pressure oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high pressure fuel (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fluid spray	D	2	Low	E	2	Low

Hazard: Improper use of auxiliary tools, handtools or service tools

Existing Controls: Not assessed as condition may vary depending on site available tools.

Recommended Additional Controls: Refer to the service tools or hand tools manual for safe use.
Refer to Generic Site Risk Controls on page 4 of this report.

Hazard: Pressurised fluid (grease)

Existing Controls: The manual outlines general safety precautions to be observed when dealing with high pressure grease when adjusting track tension (Section 2 - Safety).

Recommended
Additional
Controls:

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fluid spray	D	3	Moderate	E	3	Low

Hazard: Crushing zone

Existing Controls: Battery disconnect switch installed.
The manual outlines general safety precautions to be observed when performing this task (Section 4 - Maintenance) (Adjust bucket clearance).
The Manual advises personnel of precautions to be taken when starting and stopping the machine (Section 3 - Operation).
The Manual advises personnel not to allow anyone from riding on the work equipment or other attachments (Section 2 - Safety) and to not allow anyone to come close to any rotating or extending/retracting portion (Section 2 - Safety).
Affixed warning decal located at the work equipment indicating a hazard of being hit by the working device of the machine and to keep away from machine during operation.

Recommended
Additional
Controls: Follow correct isolation and communication procedures.
Refer to Generic Site Risk Controls on page 4 of this report.

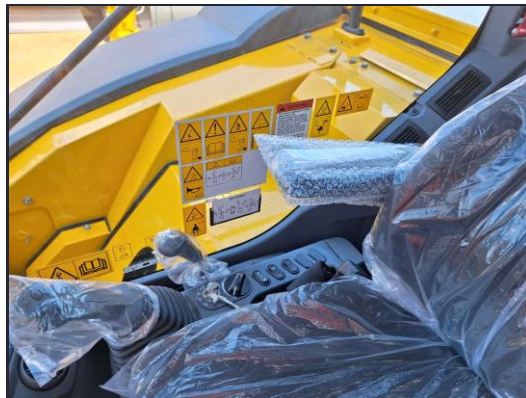
Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low

Hazard: Uncommanded movement

Existing Controls: Machine fitted with battery disconnect switch.
The Manual informs personnel of precautions to be taken prior to leaving the machine after operation (Section 2 - Safety).
Affixed warning decal in cabin informs personnel of the precautions when leaving the operator's seat.

Recommended Additional Controls: Test area is clearly defined and blocked off.
Provision of positive communication between machine operator and maintenance staff.
Machine line of travel to be kept clear.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Collision	D	4	High	E	4	Moderate
Crushing	D	4	High	E	4	Moderate
Cutting, stabbing	D	4	High	E	4	Moderate
Shearing	D	4	High	E	4	Moderate
Striking	D	4	High	E	4	Moderate



Cabin warning decal

Hazard: Explosion

Existing Controls: The Manual informs personnel of the risk of explosion and fire when welding on the machine (Section 2 - Safety).
The Manual informs personnel that batteries generate hydrogen gas, and the necessary precautions to prevent explosions and/or fire (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	3	Moderate	E	3	Low

Hazard: Projected objects

Existing Controls: The Manual informs personnel to wear safety gloves and glasses when using a hammer (Section 2 - Safety).
The manual outlines general safety precautions to be observed when performing this task (Section 4 - Maintenance) (Check and adjust track tension).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Striking	D	3	Moderate	E	3	Low

Hazard: Weight of components

Existing Controls: None.

Recommended Additional Controls: Use two people or mechanical lifting aid.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Musculoskeletal Injuries	D	3	Moderate	E	3	Low

5. Maintenance - Time Intervals

5.021 Maintenance - 100 Hours, 250 Hours, 500 Hours, 1000 Hours, 2000 Hours, 4000 Hours, 5000 Hours

Access System: Cabin access, Rear engine bay access/ Battery box access, Service bay right access, Swing machinery, Under machine/undercarriage access, Work equipment access

Hazard: Pinch point

Existing Controls: None.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	C	2	Moderate	D	2	Low

Hazard: Height of service point

Existing Controls: The Manual outlines general safety precautions to be observed for work at high places (Section 2 - Safety).

Recommended Additional Controls: Utilise an elevated work platform (EWP) when performing task.
Ensure machine is on level ground.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	D	3	Moderate	E	3	Low

Hazard: Projected dust/fluid/mud

Existing Controls: The Manual informs personnel to wear correct PPE whilst using compressed air for cleaning operations (Section 2 - Safety).

Recommended Additional Controls: Replace filters instead of cleaning them.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Dust inhalation	D	2	Low	E	2	Low

Hazard: Fluid spillage

Existing Controls: The Manual advises personnel to dispose of drained fluids as per local legislative guidelines (Section 2 - Safety).

Recommended Additional Controls: Ensure container is of sufficient size to catch drained fluids.
Spill kit available and easily accessible.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Slips, trips & falls	C	2	Moderate	E	2	Low

Hazard: Hazardous materials

Existing Controls: The Manual informs personnel of precautions to be taken when handling battery electrolyte (Section 2 - Safety).
Affixed warning decal to battery informs personnel of precautions to be observed when handling batteries.

Recommended Additional Controls: Wear gloves and wash hands after completing task.
Material Safety Data Sheet (MSDS) readily available.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Skin irritation	C	2	Moderate	E	2	Low

Hazard: Hot fluids

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high temperature oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high temperature coolant (Section 2 - Safety).
Affixed warning decal to radiator informs personnel of hot coolant, and steps to be taken to prevent coolant from spurting out.
Affixed warning decal to radiator informs personnel of hot water, and steps to be taken to prevent hot water from spurting out.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Scalding	D	2	Low	E	2	Low

Hazard: Pressurised fluid

Existing Controls: The Manual outlines general safety precautions to be observed when dealing with high pressure oil (Section 2 - Safety).
The Manual outlines general safety precautions to be observed when dealing with high pressure fuel (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fluid spray	D	2	Low	E	2	Low

Hazard: Improper use of auxiliary tools, handtools or service tools

Existing Controls: Not assessed as condition may vary depending on site available tools.

Recommended Additional Controls: Refer to the service tools or hand tools manual for safe use.
Refer to Generic Site Risk Controls on page 4 of this report.

Hazard: Projected objects

Existing Controls: The Manual informs personnel to wear safety gloves and glasses when using a hammer (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Striking	D	2	Low	E	2	Low

Hazard: Crushing zone

Existing Controls: Battery disconnect switch installed.
The manual outlines general safety precautions to be observed when performing this task (Section 4 - Maintenance) (Adjust bucket clearance).
The Manual advises personnel of precautions to be taken when starting and stopping the machine (Section 3 - Operation).
The Manual advises personnel not to allow anyone from riding on the work equipment or other attachments (Section 2 - Safety) and to not allow anyone to come close to any rotating or extending/retracting portion (Section 2 - Safety).
Affixed warning decal located at the work equipment indicating a hazard of being hit by the working device of the machine and to keep away from machine during operation.

Recommended Additional Controls: Follow correct isolation and communication procedures.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low



Warning decal at the work equipment.



Cabin warning decal

Hazard: Uncommanded movement

Existing Controls: Battery disconnect switch installed.
The Manual informs personnel of precautions to be taken prior to leaving the machine after operation (Section 2 - Safety).
Affixed warning decal in cabin informs personnel of the precautions when leaving the operator's seat.

Recommended Additional Controls: Test area is clearly defined and blocked off.
Provision of positive communication between machine operator and maintenance staff.
Machine line of travel to be kept clear.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Collision	D	4	High	E	4	Moderate
Crushing	D	4	High	E	4	Moderate



Cabin warning decal

Hazard: Explosion

Existing Controls: The Manual informs personnel of the risk of explosion and fire when welding on the machine (Section 2 - Safety).
The Manual informs personnel that batteries generate hydrogen gas, and the necessary precautions to prevent explosions and/or fire (Section 2 - Safety).

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Burns	D	3	Moderate	E	3	Low

Hazard: Fans, belts and pulleys

- Existing Controls:** Battery disconnect switch installed.
The Manual informs personnel to avoid wearing loose clothing or any accessories (Section 2 - Safety).
The Manual outlines the general precautions that should be taken when near rotating parts (Section 2 - Safety).
The Manual informs personnel not to perform maintenance or adjustments whilst engine is running. If engine must be run for certain tasks, one person must be in the operator's seat and able to stop the engine at any time (Section 2 - Safety).
- Recommended Additional Controls:** Remove guarding only when access is required, and replace guarding after task completion.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Low
Striking	D	3	Moderate	E	3	Low

Hazard: Handling flammable fluid

- Existing Controls:** The Manual informs personnel of precautions to be taken when handling battery electrolyte (Section 2 - Safety).
The Manual informs personnel of steps to prevent fire from occurring (Section 2 - Safety).
The manual informs personnel of actions to be taken in the event of a fire (Section 2 - Safety.).
- Recommended Additional Controls:** Ensure fire fighting equipment is easily accessible.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Fire	D	3	Moderate	E	3	Low

6. Emergency Situation

6. EMERGENCY SITUATION
6.01 RECOVERY

Hazard: Not assessed due to varying conditions. Separate Risk Assessments to be completed on a case-by-case basis.

6. Emergency Situation
6.01 Fire

Hazard: Fire

Existing Controls: Fire extinguishers installed.
The Manual informs personnel of steps to prevent fire from occurring (Section 2 - Safety).
The Manual informs personnel of actions to be taken in the event of a fire (Section 2 - Safety).
The Manual informs personnel not to start engine by short circuiting the engine starting circuit (Section 2 - Safety).
The Manual informs personnel of the risk of explosion and fire when welding on the machine (Section 2 - Safety).
The Manual informs personnel that batteries generate hydrogen gas, and the necessary precautions to prevent explosions and/or fire (Section 2 - Safety).
Affixed warning decals for precaution when handling battery and for prohibiting the short-circuiting of starting circuit when starting engine.

Recommended Additional Controls: Refer to Generic Site Risk Controls on page 4 of this report.

Initial Risk Assessment				Residual Risk Assessment			
Risk	L	C	Risk Rating	L	C	Risk Rating	
Burns	D	4	High	E	4	Moderate	



Portable fire extinguisher inside cabin.

6. Emergency Situation

6.02 Uncontrolled movement

Hazard: Machine collision

Existing Controls: Rotating beacon installed.
Rearview camera system installed.
Audible warning alarms (i.e. horn) installed.

Recommended Additional Controls: Additional collision avoidance system can be fitted to the machine.
UHF/VHF radio can be fitted.
Refer to Generic Site Risk Controls on page 4 of this report.

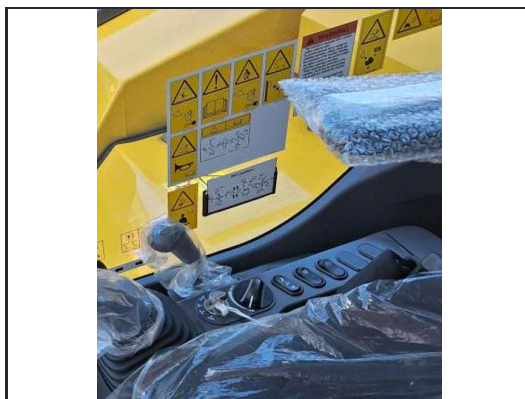
Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	4	High	E	4	Moderate

Hazard: Uncommanded movement

Existing Controls: Battery disconnect switch installed.
The Manual informs personnel of precautions to be taken prior to leaving the machine after operation (Section 2 - Safety).
Affixed warning decal in cabin informs personnel of the precautions when leaving the operator's seat.

Recommended Additional Controls: Test area is clearly defined and blocked off.
Provision of positive communication between machine operator and maintenance staff.
Machine line of travel to be kept clear.
Refer to Generic Site Risk Controls on page 4 of this report.

Risk	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Collision	D	4	High	E	4	Moderate
Crushing	D	4	High	E	4	Moderate
Cutting, stabbing	D	4	High	E	4	Moderate
Shearing	D	4	High	E	4	Moderate
Striking	D	4	High	E	4	Moderate



Cabin warning decal.

Hazard: Machine rollover

Existing Controls: The Manual informs personnel of precautions to be observed when working on loose ground (Section 2 - Safety).
 The Manual informs personnel of precautions to be observed when travelling machine (Section 2 - Safety).
 The Manual informs personnel of the method in which to operate the machine (Section 3 - Operation).
 ROPS/FOPS installed.

Recommended Refer to Generic Site Risk Controls on page 4 of this report.
Additional
Controls:

Initial Risk Assessment				Residual Risk Assessment		
Risk	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	4	High	E	4	Moderate



ROPS certification.