



**NPCL PROJECT  
CHENNAI**

**Risk Assessment Record**

Activity: **Installation of Fire Fighting System**

Document Reference

GEMC-FP-A-MST-0019

Rev. No.

Rev. Date

00

20/03/2021

Assessed by

Title

Signature

**Safety  
Officer**

No	ACTIVITY	IDENTIFIED HAZARDS/RISKS	People Involved	Base Risk Ranking (Without Controls)				CONTROL MEASURES	Residual Risk Ranking (With Controls)				Person Responsible
				L	S	Risk Score	Risk Rating		L	S	Risk Score	Risk Rating	

1	Delivering, unloading and storing of Firefighting Pipes and fittings using pickup and unloading by manual handling	<p><b>Plant and Traffic movement</b></p> <ul style="list-style-type: none"> <li>Run over by vehicles/plants</li> <li>Hit by reversing equipment</li> <li>Overhead obstructions</li> <li>Vehicle break down</li> <li>Property damage</li> <li>Collision with other vehicles</li> <li>Personal injury</li> <li>Fatality</li> </ul> <p>Accident due to poor lighting and visibility (operation at night)</p>	Operatives Staff/visitors	3	4	12	Medium	<ol style="list-style-type: none"> <li>Delivery/ collection drivers shall be subject to McLaren induction/Training with regards to traffic management.</li> <li>Ensure exclusion zone is set up around the preparation work area and all plant movement and checked by supervisor</li> <li>Always use the pedestrian access provided</li> <li>Traffic light batons shall be provided for banks man at night</li> <li>All plant to have a fully trained banks man present all times.</li> <li>No plant to reverse without banks man.</li> <li>Ensure access route are sufficient and safe to use.</li> <li>Do not take rest in or under vehicles</li> <li>Proper barricade and safety signboard provided on open excavation</li> <li>All vehicles must be fitted with reverse alarm / Flashing light.</li> <li>The work place and all access to be well illuminated.</li> <li>Enforce Speed limit</li> <li>Ensure all vehicles entering the site is properly maintained and reported if found any defect</li> <li>Ensure materials are secured/tied in pallet trolley to avoid fall from trolley.</li> </ol>	1	4	4	Low	Site Eng. Supervisor, Foreman,
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2	Manual Handling	<ul style="list-style-type: none"> <li>1. Musculoskeletal disorders</li> <li>2. Hand injuries</li> <li>3. cut &amp; bruises</li> </ul>	Operatives involved in work	3	4	12	Medium	<ul style="list-style-type: none"> <li>1. Eliminate the need for manual handling by using mechanical aid.</li> <li>2. Reduce the weight of a load to limit force exertion</li> <li>3. If unsure of the load weight, check with supervisor.</li> <li>4. Ensure proper manual handling procedure</li> <li>5. Ensure adherence with sufficient and appropriate PPE.</li> <li>6. Limit load carrying to 20kg per person</li> <li>7. Supervisor must make sure while manual handling load individual task and environment to be considered to reduce the risk of manual handling.</li> </ul>	1	4	4	Low	Supervisor, Foreman, Site Eng.
3	Material storing	<ul style="list-style-type: none"> <li>• Slips, Trips and fall</li> <li>• Poor house keeping</li> </ul>	Operatives Staff/storekeeper	3	4	12	Medium	<ul style="list-style-type: none"> <li>1. Ensure accesses are kept clear at all times.</li> <li>2. Housekeeping to be carried out regularly throughout the day when required</li> <li>3. Supervisor to ensure operatives are stacking material neatly and stacks are stable and in a safe condition</li> <li>4. Provide adequate lighting especially during night hours</li> <li>5. Appropriate space is allowed around storage areas for employees to move around safely without the risk being trapped between stacked materials.</li> <li>6. Maintain good housekeeping.</li> </ul>	1	4	4	Low	Supervisor, Foreman, Site Eng.



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4	Cutting & grinding operation	<ul style="list-style-type: none"> <li>Contact with grinding or cutting wheel</li> <li>Minor/Major injuries, cuts</li> <li>Ejection of abrasive material from grinding wheel.</li> <li>Eye injury.</li> <li>Equipment failure</li> </ul> Fire	All concerned parties	3	4	12	Med	<ul style="list-style-type: none"> <li>Grinding wheels shall be guarded. Ensure that the tools are provided with guards to avoid accidental contact.</li> <li>RPM of the grinding wheel shall be greater than the driver.</li> <li>Hot work permit shall be taken from concerned authority before performing the job</li> <li>Damaged or expired wheel shall be discarded.</li> <li>Barricade immediate work area.</li> <li>Safety glass along with clear face shield shall be worn.</li> <li>Training on power tools handling is beneficial.</li> <li>Trained Fire watchers, fire blankets, fire extinguishers available to prevent the risk of fire.</li> <li>All combustible materials kept away from the area of work.</li> </ul> Fire extinguisher in place and easily accessible	1	4	4	LOW	Operator Task supervisor Foreman
5	Threading and grooving Operations	Clothing entanglement with moving parts	Involving Operatives	3	4	12		<ul style="list-style-type: none"> <li>Positioning of machines will be planned to allow clear access and avoid causing obstructions.</li> <li>Machines will be maintained to the manufacturer's instructions.</li> </ul>	1	4	3	LOW	Operator Task supervisor Foreman



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								<ul style="list-style-type: none"> <li>• COSHH assessments must be made available for any lubricating or cutting fluids used on machines.</li> <li>• Guards are to be fitted to the rotating parts, and end guards around the rotating pipe ends, unless the machine is positioned so that no person can approach a rotating pipe end.</li> <li>• Machines are to be positioned clear of access routes and warning notices are to be displayed.</li> <li>• Operators are not to wear loose clothing or gloves or use rags or other materials which could become entangled with moving parts.</li> <li>• Machines will be operated by foot switches, and supply leads are to be routed so as to avoid damage to leads and trip hazards.</li> <li>• Only trained operators are to erect, maintain and use these machines. The work area is to be monitored to ensure clear access is available at the machine, that all guards are in place and the floor is clean. Machines are not to be left running while unattended.</li> </ul> <p>Operators will be trained to set up and use these machines in accordance with manufacturer's instructions. Operators will also be made aware</p>					
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								of any hazards and controls required by relevant COSHH assessments.					
6	Installation of Firefighting Pipes and sprinkler using mobile scaffolding	<p><b>Work at height</b></p> <ul style="list-style-type: none"> <li>• Fall from height</li> <li>• Falling objects</li> <li>• Over loading</li> <li>• Protruding objects</li> <li>• Access &amp; egress</li> </ul>	Operatives/Staff/ Visitors Others	3	4	12	Medium	<ol style="list-style-type: none"> <li>1. STARRT card briefing must before start the activity</li> <li>2. Ensure the PTW in place.</li> <li>3. Ensure proper working platform with complete fall protection</li> <li>4. Ensure Full body harness and 100% Tie off</li> <li>5. Ensure the scaffold platform is properly erected with "Safe to use" tag.</li> <li>6. Ensure castor wheels are locked</li> <li>7. Hand tools must be secured/tethered</li> <li>8. Work materials strictly not allowed to be stored on platform except for working tools</li> <li>9. Ensure avoid over reaching and climb on handrail.</li> <li>10. Ensure unauthorised person not allowed to modify the scaffolding and if needed to any changes then must be modified by trained and certified scaffolder.</li> <li>11. Ensure safe access to the working platform</li> <li>12. Scaffold access must be free from obstruction</li> <li>13. Ensure sufficient illumination in work area</li> <li>14. Ensure while fittings the GI clamp and brackets operatives must safely use drill machine to avoid finger injury.</li> <li>15. Ensure that working near fragile surface special care of body and eye protection with necessary PPE.</li> <li>16. Must clean the debris after completion the</li> </ol>	1	4	4	Low	Supervisors Foreman, Site Eng.



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								job and maintain good housekeeping.					
7	Installation of sprinkler	1 Sharp edge item 2 Sprinkler glass may damage	Installer Foreman Supervisor	3	4	12	Med	<ol style="list-style-type: none"> <li>A qualified and experienced plumber is needed to optimally install this network of pipes to fit the sprinklers with high volumes of water when the need arises.</li> <li>Ensure sprinkler installation according to NEPA 13 AND 14</li> <li>Use necessary ppe while using sharp glass Materials.</li> </ol>	1	4	4	Low	Site Engr Supervisor Foreman
8	Use of Ladder (Ladder is not allowed to use daily basis but in certain cases where there is very narrow place and even podium ladder not possible to fix in that cases Ladder can use if permission)	Falling from height  Working on Uneven ground	Operatives/ Staff/	3	4	12	Med ium	<ol style="list-style-type: none"> <li>Only light work, off short duration and work in which the operative can maintain secure hand and foot hold can be undertaken form a ladder</li> <li>Never try to overreach with any ladders</li> <li>Check the ladder is of suitable quality for industrial use and is in good condition</li> <li>Maintain a minimum of 3 points of contact with stepladders at all times (feet/thighs/hands) If possible avoid the use of stepladders at a working height of 2 meters and more.</li> <li>Check the ladder legs (and stays) are fully deployed or locked (depending on type) to maintain maximum base dimensions and the step</li> </ol>	1	4	4	Low	Supervisor Site Eng. Foreman,



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	<b>granted from McLaren Safety)</b>	Falling objects						ladder is orientated to provide maximum stability. 6) Stepladders/ladders has to be used on leveled ground/firm base 7) Ensure that during using ladder from the top 2 step is blocked to avoid climb on that. 8) The ladder securely fixed to prevent slipping outwards or sideways or securely footed at all times. 9) Person must hold the ladder while another operative working on it 8) Materials should not be placed above the thread of ladders/step ladders 9) Do not carry any materials in one hand while climbing or getting down from ladder 10) Ensure the area under the ladder is barricaded especially if it is being used in a public area. 11) Ensure the ladder is electrical insulated podium type if working in live services					
9		<ul style="list-style-type: none"> <li>Spillage/ soil contamination</li> <li>Burns</li> <li>Contact with skin</li> <li>Acute/Chronic adverse health effect.</li> </ul>	Operatives using solvent	3	4	12	Medium	1. Ensure that all chemical substances have a COSHH assessment 2. Refer SDS prior to any handling of hazardous substances and ensure SDS is easily accessible at site while working with chemicals. 3. Ensure chemicals are properly stacked. 4. Ensure all chemical containers are properly labeled. 5. Spill kits to be available at site. 6. Ensure operatives use the correct PPE	1	4	4	Low	Supervisors Foreman, Site Eng.



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	Use of Primer/paint (Hazardous Substance)	<ul style="list-style-type: none"> <li>• Fire</li> </ul>					7. Competent person to oversee the storage, use and disposal of hazardous materials. 8. Ensure that correct welfare/first aid facilities are available in the area i.e. washing facility/eye wash. 9. Proper and adequate PPE to be used always 10. Ensure all chemical containers are properly labeled. 11. Adjust work schedules so that workers are not overexposed to a hazardous chemical. 12. Wear respiratory protection 13. Ensure proper and adequate PPE to be used always. 14. Ensure smoking only in designated area 15. Ensure appropriate Firefighting equipment's are in place and easily accessible						
10	Use of power tools such as Grinder/Cutter & Drill machine,	<ul style="list-style-type: none"> <li>• Damaged Sockets &amp; cable insulation.</li> <li>• Electrocutation</li> <li>• Electric shock</li> <li>• Short circuit &amp; Burns</li> <li>• Trip/Fall</li> <li>• Noise</li> <li>• Hearing loss</li> <li>• Vibration</li> </ul>	Operatives and staff	3	4	12	Medium	1. All portable electrical equipment must be PAT tested and color coded. Make sure the test dates are visible on the equipment. 2. Ensure all disk shall be appropriate and expiry date is over. 3. Ensure all power tools are in good condition and appropriately maintained 4. PTW to be obtained, prior to commencing the task 5. Damaged industrial sockets and power cables must be removed.	1	4	4	Low	Supervisor Foreman Site Eng.



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		<ul style="list-style-type: none"> <li>Dust</li> </ul>					<ol style="list-style-type: none"> <li>Ensure the electrical cable is not damaged and has not been repaired with insulating tape or unsuitable connectors.</li> <li>Ensure cables from power tools shall be organized so as not to present a tripping hazard</li> <li>Only trained competent operatives to operate the power tools.</li> <li>Ensure proper and regular maintenance of equipment that takes account of noise</li> <li>Ensure proper hearing protection always.</li> <li>Make sure people use the right tool for the job and are trained to use it correctly</li> <li>Ensure defective tools that require maintenance is reported for repair or replacement.</li> <li>Instruct workers to keep their hands warm and dry, and to not grip a vibrating tool too tightly.</li> <li>Ensuring proper job rotation and limiting time operatives working with power tools and hand tools.</li> <li>Use dust mask</li> <li>Ensure proper earth leakage protection is provided.</li> <li>All power tools must be 110V to be ensured.</li> </ol>						



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11	Working at night time	<ul style="list-style-type: none"> <li>Poor visibility due to darkness / poor illumination</li> <li>Lone worker</li> </ul>	Operatives/staff	3	4	12	Medium	1. Ensure proper night work permit is obtained 2. Proper lighting system should be in place 3. Ensure proper Communication / Coordination and close supervision 4. Industrial safe torches to be available for emergency situations 5. High visibility Traffic Vest for personnel's in night shift 6. Avoid lone working and always ensure buddy system while working at night 7. Employees to be trained and understand McLaren Crises plan.	1	4	4	Low	Site Engr Supervisor Foreman
12	Installation of Fire hose reel with cabinet and assessor fittings by manual handling	Fall from hand Dust Noise Spark and Electric shock	Installer Foreman	3	4	12	Med	1 Ensure Proper instruction from supervisor and act accordingly. 2 During manual operation most important is follow the load and size of the box and accordingly manpower will deploy to avoid fall from hand. 3 Proper PPE specially using ear plug during making hole in wall and using mask to avoid dust 4 All the power tools must be proper maintained and inspected regular basis 5 No loose connection and all the socket must be in good condition to avoid spark or electric shock 6 Ensure clean the area after work and there is no debris.	1	4	4	Low	Site Engg Supervisor Foreman



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13	Pressure testing	Operation of valves during the pressure testing may cause serious injury or fatality.	Properties and other surrounding personnel within the work area	2	4	8		<ul style="list-style-type: none"> <li>A valid permit for carrying out pressure testing shall be arranged from the concerned department.</li> <li>A tool box talk meeting shall be conducted and all the hazards to be recognized and clearly communicated prior to start the work.</li> <li>All employees must be competent to do the task.</li> <li>Proper warning tapes and safety notices indicating that flushing/pressure testing is in progress shall be placed at site.</li> <li>Warning notices and lock shall be provided on the pump isolators and starters as required.</li> <li>The isolators to be locked and key shall be keep with the responsible person involved in the task.</li> <li>All details shall be clearly mentioned on the tag including contact number of the responsible person.</li> <li>Supervision shall frequently monitor the testing/flushing.</li> <li>The employee shall wear proper foot protection.</li> <li>Emergency contact number shall be displayed.</li> <li>Suitable fire extinguisher to be arranged near</li> </ul>	1	4	4	<b>LOW</b>	
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								<p>the work location.</p> <ul style="list-style-type: none"> <li>No valves shall be operated where the direction of flow may be directed to the face of the operative.</li> <li>All necessary PPE shall be arranged and used</li> </ul>					
14	Precommissioning activity	<ul style="list-style-type: none"> <li>Unauthorized operation</li> <li>Water leakage</li> <li>Wet floor</li> <li>Falling of material</li> </ul>	Properties and other surrounding personnel within the work area	3	3	9		<ul style="list-style-type: none"> <li>Permit to work system shall be followed and Lock out tag out system shall be done by McLaren</li> <li>The employee shall be competent to do the task.</li> <li>Supervision shall be done a periodic inspection on isolated valve.</li> <li>Plastic drums shall be arranged to collect the water, in case of any water leakage.</li> <li>A good standard of housekeeping shall be provided.</li> <li>Check that the Fire Fighting piping network is completed with fire hose reel, cabinet, pressure gauge, fire extinguishers, proper valves, drains vents strainers pressure switches instruments and sprinkle drains, vents, strainers, switches in place</li> </ul>	1	3	3	<b>LOW</b>	Operator Task supervisor Foreman Operatives
15	<ul style="list-style-type: none"> <li>Use of Hand tools</li> </ul>	<ul style="list-style-type: none"> <li>Improper selection of hand tools.</li> <li>Damaged and Defective Hand</li> </ul>	Operatives/Staff	3	3	9	<b>Medium</b>	<ol style="list-style-type: none"> <li>Hand tools should be visually inspected for defects, prior to use.</li> <li>Never use damaged, blunt or broken tools to avoid injury.</li> <li>Select right tools for right Job</li> </ol>	1	3	3	<b>Low</b>	Site engg



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		tools. <ul style="list-style-type: none"> <li>• Hand injuries</li> <li>• Pinch point</li> <li>• Ergonomics</li> <li>• Repetitive strain injury</li> </ul>						4. Ensure no Homemade or makeshift tools to be used at site 5. Remove from service any tool that shows signs of damage or defect 6. Ensure Hand tools are Stored in accordance with the manufacturer's instructions. 7. Ensure hands are not in direct line of fire while working with hand tools 8. Ensure appropriate PPE at all times.					Supervisor Foreman
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Approved By: Name Position \_\_\_\_\_ Signature \_\_\_\_\_

**RISK ASSESSMENT & CONTROL GUIDELINES**

**1. Executing Steps:**

**1.1. Planning**

- a) Construction and HSE team must ensure that hazard identification is complete.
- b) Construction and HSE team must prioritize the hazard issues, which are of significant in nature. (It means that risks have well established legal requirements, potentially high risks).
- c) Construction and HSE team to prepare the risk assessment plan for the priorities identified hazards for these potential high risks.

**1.2. Risk Assessment**

Risk is the probability of an event occurring in a given set of circumstances. The 'event' is an exposure to hazard. The hazard is the potential to cause harm. The risk assessment is the technique of evaluating not just the likelihood of an event occurring, but also the outcome will be in terms of injury, loss, damage or harm.

**1.3. Risk Assessment Process**

The process of carrying out a risk assessment should be as follows.

1. Identify the hazards.
2. Identify who might be harmed and how.
3. Evaluate the risk and implement the control measures.
4. Record the significant findings.
5. Review the assessment and update if necessary.

**1.4. Examination of the Hazards and Risk Associated**

- Competent staff must be used in examining the risk associated with the identified hazard.
- Competent staff should examine following aspect to determine the risk involved:
  - Examine the existing control measures in place.
  - Identify employees at risk.
  - Likelihood of risk.
  - Severity
  - Risk level and their tolerability.

**1.5. Evaluating the risk:**

Once the necessary information has been obtained on the hazards encountered by work activities, next stage is to access the risks.

**1.5.1. Risk Rating Score**

Risk rating score is a combination of two factors.

- The severity of the risk that could injure persons or cause damage to plant.
- The likelihood of the risk that it could happen (Probability).

**RISK RATING = LIKELIHOOD X SEVERITY**

**NOTE: Each activity has to be assessed for the risk value for determining the level of Severity and likelihood are mentioned in the table below.**

		SEVERITY					
		No Injury (1)	Minor Injury (2)	Moderate Injury (3)	Major Injury (4)	Catastrophic (5)	
LIKELIHOOD	Rarely (1)	1	2	3	4	5	
	Unlikely (2)	2	4	6	8	10	
	Possible (3)	3	6	9	12	15	
	Likely (4)	4	8	12	16	20	
	Almost Certain (5)	5	10	15	20	25	
RISK LEVEL:		Low		Medium		High	

