##

**CNC MINI MILL**

## Scope

This document is intended to estimate potential human health and environmental risks posed by current and potential future conditions at **State Library of Queensland (State Library) Fabrication Lab** Facility. The risk assessment describes the approach to the risk assessment and facilitates appropriate ways to evaluate current and future risks.

Refer to the **Safe Operating Procedures** (**SOP**) for information regarding the safe usage and check list for this equipment.

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| Plant/Equipment Description: **CNC Mini Mill** |
| Leaders:  **Daniel Flood**  |
| Locations:  **The Edge Fabrication lab – Machine Shop** |
| Assessment Date:  **02/03/2020** | Review Date:  **02/03/2021** |

*N.B. This assessment can remain active for up to 5 years. However, an annual monitoring and review process should be undertaken and recorded – refer to the last page of this document.*

*Below are the details of the manufacturing or production processes attributed to this item of equipment categorised by their assessed inherent risk levels (refer to the Equipment/Process Risk Matrix). The actions required for approval for each level of inherent risk are mandatory.*

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| **Inherent Risk Level** | **Details of Processes** |  **Action Required/Approval** |
| 🗹 | **Medium** | * + - * Computer numerical control (CNC) machining makes certain manufacturing processes easier by automating complex commands and speeding up the rate at which the equipment completes machining tasks.
			* The range of programming commands typically includes drilling, grooving, facing, and profiling.
			* Operators must have training and a clear understanding of the required programming parameters.
			* The CNC Mill is normally a fully enclosed design. The cutting tool will not start unless the transparent safety door is closed and automatically locked in position. The guard door can only be opened if the cutter has stopped.
 | * Document controls in planning documents and/or complete this *Plant Risk Assessment*.
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Minimum standards

| Minimum qualifications and experience *Listed below are the general “minimum” recommendations for the management of this Plant/Equipment.*🗹 *Indicate the minimum management controls.*  |
| --- |
| X State Library staff member with experience, ability and competency in the safe use of this plant/equipment  *(indicate one or more of the following):*X Specific knowledge of the safe and correct use of this plant/equipmentX Experience (i.e. previous involvement and familiarity) in the safe use of this plant/equipmentX Demonstrated expertise, ability and competency with this plant/equipment[ ]  Documented qualifications relating to the use of this plant/equipment (e.g. in a staff profile) **OR** X A Contractor, other than a State Library staff member, with:X Expertise in the safe and correct use of this plant/equipment[ ]  Documented qualifications that demonstrate experience, ability and competency in the safe use of this plant/equipment. |
|  X Will any staff require initial and/or ongoing training for the safe use of this plant/equipment?If yes, give details:  **Initial training required**  |
|  X Will members be operating this plant/equipment?If yes, state how members use of this plant/equipment will be managed (e.g. Workshop Safety Induction)Give details:  **Equipment safety induction & active supervision**  |
|  Further information if required:  |
|  |
|  Minimum control requirements  |
|  Supporting documentation available in the school on this plant/equipment includes: X Operators ManualX Safe Operating Procedures (SOP)X Equipment Maintenance Records (EMR)X A process for recording student safety induction e.g. Student induction register X A process for recording staff training and experience, e.g. Staff induction register |
|  X All guards are in place and in good working order for this plant/equipment  |
|  [ ]  Safe Working Zones are defined for this plant/equipment (e.g. yellow lines and/or appropriate signage)  |
|  X Suitable personal protective equipment (PPE) is available to be used by all operators |
|  X This plant/equipment complies with relevant safety standards |
|  Further information if required:  |

Hazards and control measures

*Listed below are indicative hazards/risks and suggested control measures. These are by no means exhaustive lists. Add details of any other hazards/risks or additional controls you intend to implement.*

🗹 *Indicate the control measures adopted. Detail their implementation and any additional controls required.*

| **Hazards/Risks** | **Hierarchy of Recommended** **Control Measures** | **Yes** | **No** | **Details of how this will be implemented***(and any additional controls)* |
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|  **Exposure to Rotating** **or Moving Parts:*** **Entanglement and**

**Entrapment**Could hair, clothing, ties, jewellery or other materials become entangled with moving parts of the equipment?* **Impact and Striking**

Could anyone be struck by the unexpected or uncontrolled movement of the equipment? **Note:** CNC robotics may move in a direction not anticipated or planned, at high speed in linear or rotary directions.The CNC may also eject work pieces, off-cuts or molten metal. Workers are at risk from being hit by the robotics or parts of the work piece. | 1. Where possible, potentially hazardous plant, machinery and processes, including the CNC Mill, would be substituted or replaced with less hazardous alternatives.
 | X | [ ]  | **Supervisor to consider the requirements and alternates**  |
| 1. All necessary CNC Mill guards and safety devices are in place protecting workers from all moving parts.
 | X | [ ]  | **As per manufacturers standards and general pre-flight checks and procedures** |
| 1. Micro switches are fitted that cut off power when covers or guards are opened.
 | [ ]  | [ ]  | **Fixed to cabinet door**  |
| 1. “Lock Out” or warning “Danger” tags are affixed to the CNC Mill when under repair or maintenance preventing workers from using the equipment.
 | X | [ ]  | **Standard LOTO procedures** |
| 1. Staff and member training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Safety induction** |
| 1. Safe operating procedures (SOPs) for the CNC Mill are available and clearly displayed.
 | X | [ ]  | **With equipment and in SOP folder** |
| 1. Emphasis is placed on the requirement for plant operators to remove all jewellery, tuck in loose clothing and tie back long hair.
 | X | [ ]  | **As per SOP requirements** |
| 1. All appropriate and approved personal protective equipment (PPE) is used where required.
 | X | [ ]  | **All PPE is provided, as per SOP requirements**  |
| **Slips, Trips, Falls** **and Abrasions:**Can anyone using the plant or in the vicinity of the plant, slip, trip or fall due to the working environment or other factors?e.g. Poor housekeeping, slippery or uneven work surfaces, power cables across work areas causing injuries and abrasions? | 1. Slip resistant flooring is encouraged. Regular checks are made for unsafe wear and damage. Inspections are made for any power leads, etc.
 | X | [ ]  | **Anti-slip mats available if required** |
| 1. Procedures are in place for the disposal of all waste materials around the CNC Mill.
 | X | [ ]  | **Storage & waste disposal procedures** |
| 1. Staff training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Safety induction** |
| **Environmental:*** **Noise**

Is it likely that the normal operation of this plant will produce excessive noise levels?* **Dust, Fumes and Vapours**

Is it likely there will be airborne dust particles, toxic fumes or volatile vapours produced and therefore be present in the workspace?* **Lighting**

Is there insufficient lighting to operate this plant in a safe manner? Is there a possible strobe lighting effect caused by faulty fluorescent tubes in the workspace? | 1. The CNC Mill is regularly maintained to help reduce exposure to these hazards.
 | X | [ ]  | **Routine checks and maintenance** |
| 1. All CNC Mill maintenance is documented in a register (EMRs).
 | X | [ ]  | **Service records**  |
| 1. Exposure to noisy workshop environments is monitored and evaluated regularly for all workers.
 | X | [ ]  | **Monitoring of excess noise during operations by supervisor** |
| 1. Engineering controls (or physical changes) such as mandatory machinery guarding or any protective safety screens and enclosures are in place in all workspaces and all in good working condition.
 | X | [ ]  | **As per manufacturers standards** |
| 1. Staff and student training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Safety induction** |
| 1. All ducted dust, waste and fume extraction systems are fully maintained, cleaned and emptied, connected and operational.
 | [ ]  | [ ]  | **As per general housekeeping procedures** |
| 1. Good lighting is provided to all workspaces and this is maintained on a regular basis. Fluorescent tubes are checked and replaced as required.
 | X | [ ]  | **As per workspace risk assessment**  |
| 1. All appropriate and approved personal protective equipment (PPE) is used where required.
 | X | [ ]  | **All PPE is maintained and provided**  |
| **Electrical:**Can the operator be injured by electrical shock due to working near or contacting with damaged or poorly maintained live electrical conductors such as power outlets, extension leads, safety switches, starters and isolators or casual water on the floor near plant and machinery?  | 1. Visual checks are made of the 240v power lead and plug, and the restricted electrical assess cabinet on the CNC Mill. Interfaces with electrical wiring and/or switches should be isolated and guarded.
 | X | [ ]  | **As per pre-flight operating procedures** |
| 1. Electrical safety inspections, testing and tagging, etc. are completed regularly as per guidelines for all corded power equipment.
 | X | [ ]  | **Annually. As per QLD WHS requirements** |
| 1. Warning “Danger” tags (or similar) are affixed when the CNC Mill equipment under repair or maintenance preventing workers from using it.
 | X | [ ]  | **Standard LOTO procedures** |
| 1. Electrical maintenance on all plant and equipment, including the CNC Mill, is documented in EMRs.
 | X | [ ]  | **Service records** |
|  **Exposure:*** **Hazardous**

 **Substances**Is it likely that the plant operator or others nearby in the workspace could be exposed to hazardous or toxic chemicals such volatile vapours, fumes or airborne particulates? | 1. The CNC Mill is regularly maintained to help minimise the risk of exposures to these hazards.
 | X | [ ]  | **Routine checks and maintenance** |
| 1. Any hazardous waste material or toxic dust and gases resulting from this machining process are monitored and managed.
 | X | [ ]  | **Active supervision and general housekeeping procedures** |
| 1. Staff and student training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Safety induction** |
|  **Ergonomics and** **Manual Handling:**Can the plant be safely operated, in a suitable location, providing clear and unobstructed access? Poorly designed work stations often necessitate teachers and students performing manual tasks involving heavy lifting and lowering, pushing, pulling or carrying, etc. Such tasks then contribute to a range of musculoskeletal sprains and strains for workers.  | 1. The CNC Mill is designed and operated at a comfortable work height (where possible) thus minimising any unsafe or excessively strenuous manual tasks.
 | X | [ ]  | **Use of standard working heights and adjustable stands as required** |
| 1. Sufficient workspace is provided in all practical classrooms to help ensure unobstructed, safe operation.
 | X | [ ]  | **Supervisor to assess work space requirements** |
| 1. “Safe Working Zones” are clearly defined around all fixed plant including the CNC Mill. Floors are free of excessive wood dust, waste materials and other extraneous objects.
 | [ ]  | X | **Machine in cabinet.**  |
| 1. Staff training is provided with regard to manual handling techniques and procedures to minimise exposure to these hazards.
 | X | [ ]  | **Staff safety training.** |
|  **Explosion and Fire:**As a consequence of using this particular item of plant and equipment, could anyone be injured by the release of stored energy triggered by volatile, explosive substances such as stored gasses, vapours or liquids?  | 1. Fire extinguishers of the correct type are readily available in all workspaces and positioned near exit doorways.
 | X | [ ]  | **Routine checks and maintenance**  |
| 1. Staff training is provided regarding procedures for the correct and appropriate use of fire safety equipment.
 | X | [ ]  | **As per Australian Standards** |
| 1. Exits from buildings and other work areas are defined and access to them kept clear of obstructions.
 | X | [ ]  | **Staff Fire & Evac training.** |
| 1. Safety signage is posted clearly denoting the location of all fire safety items and emergency exits.
 | X | [ ]  | **As per Australian building codes** |

| **Other Hazards/Risks** | **Additional Control Measures***These would relate to the specific student needs, locations and conditions in which you are conducting your activity.* |
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| **Approval** |
| Submitted by: Simon McKellar | Date: 02/03/2020 |
| **[ ]**  | Approved as submitted. |
| **[ ]**  | Approved with the following condition(s):      |
| **[ ]**  | Not Approved for the following reason(s):      |
| By:       | Designation:       |
| Signed: | Date:        |

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| Staff members involved in the use of this risk assessment and the associated plant and equipment: |
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 | *Signature:*  ……………………………….. *Date:**Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:* *Signature:*  ……………………………….. *Date:*  |

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| **Monitoring and Review***This Plant and Equipment Risk Assessment is to be monitored and reviewed annually for a further four (4) years.* |

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| **Review 1:** | **Yes**  | **No** |
| * Are allocated risk levels and “Actions required” unchanged over the past 12 months?
* Are Minimum Standards and Recommended Control Measures unchanged over 12 months?
* Staffing details have remained unchanged over the past 12 months?
 | [ ] [ ] [ ]  | [ ] [ ] [ ]  |
| If the responses are “NO” for any question, record current details here, and list all staff changes *(with signatures)* |
| Reviewed by:  | Designation:  |
| Signed: | Review Date :  |

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| **Review 2:** | **Yes**  | **No** |
| * Are allocated risk levels and “Actions required” unchanged over the past 12 months?
* Are Minimum Standards and Recommended Control Measures unchanged over 12 months?
* Staffing details have remained unchanged over the past 12 months?
 | [ ] [ ] [ ]  | [ ] [ ] [ ]  |
| If the responses are “NO” for any question, record current details here, and list all staff changes *(with signatures)* |
| Reviewed by:  | Designation:  |
| Signed: | Review Date :  |

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| **Review 3:** | **Yes**  | **No** |
| * Are allocated risk levels and “Actions required” unchanged over the past 12 months?
* Are Minimum Standards and Recommended Control Measures unchanged over 12 months?
* Staffing details have remained unchanged over the past 12 months?
 | [ ] [ ] [ ]  | [ ] [ ] [ ]  |
| If the responses are “NO” for any question, record current details here, and list all staff changes *(with signatures)* |
| Reviewed by:  | Designation:  |
| Signed: | Review Date :  |

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| **Review 4:** | **Yes**  | **No** |
| * Are allocated risk levels and “Actions required” unchanged over the past 12 months?
* Are Minimum Standards and Recommended Control Measures unchanged over 12 months?
* Staffing details have remained unchanged over the past 12 months?
 | [ ] [ ] [ ]  | [ ] [ ] [ ]  |
| If the responses are “NO” for any question, record current details here, and list all staff changes *(with signatures)* |
| Reviewed by:  | Designation:  |
| Signed: | Review Date :  |

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