##

**VACUUM FORMER**

## 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: **Vacuum Former (portable laser cut)** |
| Leaders:  **Daniel Flood**  |
| Locations:  **Fabrication Lab** |
| 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** | * When plastic materials are heated using a heat gun.
* When plastics are fixed in a hinged frame which is moved from the heating element onto the mould before a vacuum is used to remove the air which pulls the material onto the mould.
 | * 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 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:  **If operating procedures change. EG; former size, location change, etc.** |
|  X Will members be operating this plant/equipment?If yes, state how student use of this plant/equipment will be managed (e.g. Workshop Safety Induction)Give details:  **Supervision required**  |
|  Further information if required:  |
|  |
|  Minimum control requirements  |
|  Supporting documentation available in the school on this plant/equipment includes: [ ]  Operators ManualX Safe Operating Procedures (SOP)X Equipment Maintenance Records (EMR)X A process for recording student safety induction e.g. member 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 |
|  [ ]  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 plant or materials in motion?* **Striking**

Could anyone be struck by moving objects such as the work piece being ejected, or by the unexpected or uncontrolled movement of the plant or work piece? * **Cutting, Stabbing**

**and Puncturing**Can anyone be cut, stabbed or punctured by coming into contact with moving plant or parts, or objects such as ejected work piece or waste? | 1. Where possible, potentially hazardous portable vacuum forming equipment is substituted or replaced with less hazardous alternatives.
 | X | [ ]  | **Supervisor to consider the requirements and alternatives** |
| 1. All necessary vacuum former guards and safety devices are in place protecting workers from moving parts and hot surfaces.
 | X | [ ]  | **AS per the manufacturer’s standards** |
| 1. Staff and member training is provided to minimise exposure to these hazards and risks.
 | X | [ ]  | **General safety induction and housekeeping procedures** |
| 1. Safe operating procedures (SOPs) are available and clearly displayed.
 | X | [ ]  | **Stored with equipment and in SOP folder** |
| 1. Warning “Danger” tags (or similar) are affixed to the vacuum former when under repair or maintenance preventing workers from using the equipment.
 | X | [ ]  | **Standard LOTO procedures** |
| 1. “Safe Working Zones” are to be clearly defined for work spaces where vacuum forming activities are to be performed.
 | X | [ ]  | **JSA may be needed address requirements.** |
| 1. Operators are required to remove all jewellery, tuck in loose clothing and tie back long hair.
 | X | [ ]  | **As per SOP** |
| 1. All approved personal protective equipment (PPE) is used where required.
 | X | [ ]  | **All PPE is provided**  |
| **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, dust on floors, slippery or uneven work surfaces, power cables across work areas causing injuries and abrasions? | 1. Slip resistant flooring is encouraged in workspaces. Regular checks are made for unsafe wear and damage. Inspections are made for any power leads or hoses, etc.
 | X | [ ]  | **Anti-slip mats available if required** |
| 1. Procedures are in place for the disposal of all waste materials around all workspaces where any bench mounted vacuum forming activities are to be performed.
 | X | [ ]  | **Storage & waste disposal procedures** |
| 1. Staff training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Safety induction** |
| **Environmental:*** **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. Portable vacuum forming equipment is regularly maintained to help minimise the risk of exposures to these hazards.
 | X | [ ]  | **Routine checks and maintenance** |
| 1. All vacuum former maintenance is documented.
 | X | [ ]  | **Maintenance records** |
| 1. Staff and member training is provided to minimise exposure to these hazards.
 | X | [ ]  | **General induction training and housekeeping procedures** |
| 1. All ducted fume extraction systems are connected and operational, fully maintained and cleaned.
 | X | [ ]  | **Use of workspace extraction and air filter and/or fume masks** |
| 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 and housekeeping procedures**  |
| 1. All approved personal protective equipment (PPE) is used where required.
 | X | [ ]  | **All PPE is 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 all portable power tools, their electrical switches, plugs and power leads, etc.
 | X | [ ]  | **Pre-flight checks, routine checks and maintenance**  |
| 1. Electrical safety inspections, testing and tagging, etc. are completed regularly as per guidelines for all portable power tools.
 | X | [ ]  | **Annual test and tag for corded and battery charging units** |
| 1. Warning “Danger” tags (or similar) are affixed to all portable power tools under repair or maintenance preventing workers from using them.
 | X | [ ]  | **Standard LOTO procedures**  |
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| **Exposure:*** **Heat, Burns and** **Scalds**

Could the plant operator be exposed to a heating element, exposed flame, flashback, molten metals or hot fluids likely to cause scalding or burning? * **Hazardous**

 **Substances**Is it likely that the plant operator or others nearby in the workspace could be exposed to hazardous or toxic chemicals such as volatile vapours, fumes or airborne toxic dust particulates? | 1. Portable power tools are regularly maintained to help minimise the risk of exposures to these hazards.
 | X | [ ]  | **Routine maintenance and servicing** |
| 1. All vacuum former maintenance is documented.
 | X | [ ]  | **Maintenance records**  |
| 1. Hazardous Substance Risk Assessments are completed for potential toxic moulded plastic materials and for any toxic fumes resulting from the plastics heating process.
 | X | [ ]  | **Use of extraction and P2 face masks if required** |
| 1. Staff and member training is provided to minimise exposure to these hazards.
 | X | [ ]  | **General Induction and Housekeeping procedures** |
| 1. All approved personal protective equipment (PPE) is used where required.
 | X | [ ]  | **All PPE is provided** |
| **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. Where possible, work benches supporting the vacuum former are planned and adjusted to a comfortable work height thus minimising any unsafe or excessively strenuous manual tasks.
 | X | [ ]  | **Use of standard working bench heights and adjustable stands as required** |
| 1. Sufficient workspace is provided to help ensure unobstructed, safe operation.
 | [ ]  | [ ]  | **As per workspace risk assessment** |
| 1. Floors are regularly cleaned and free of excessive wood dust, waste materials and other extraneous objects.
 | [ ]  | [ ]  | **As per standard housekeeping procedures** |
| 1. Staff training is provided with regard to manual handling techniques and procedures to minimise exposure to these hazards.
 | [ ]  | [ ]  | **Staff safety and manual handling inductions.** |
| 1. All approved personal protective equipment (PPE) is used where required.
 | [ ]  | [ ]  | **All PPE equipment is provided**  |

| **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: 01/03/2020 |
| **[ ]**  | 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 at this school 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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