##

**ANGLE GRINDER***Cordless*

## 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: **Angle Grinder 18V Battery** |
| Leaders:  **Daniel Flood** |
| Locations:  **The Edge 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 grinding flat surfaces and edges of materials when secured in a vice.
* When grinding flat surfaces and edges of materials (where the wheel does not ‘cut’ the metal, only grinds the surface).
* Where the work piece to be ground is in a large enough area for free body movement, and sparks can be safely directing away.
 | * Document controls in planning documents and/or complete this *Plant Risk Assessment*.
 |
| 🗹 | **High** | * Where movement is restricted and sparks may fall or ‘bounce’ back at the operator or others.
* When grinding where the disk performs a trenching action (cutting). This may cause kickback and endangering the operator or others.
* When members are always under the appropriate supervision.

**NB**: cordless portable grinders are generally less powerful than regular angle grinders and less likely to cause severe kick back. | * A *Plant Risk Assessment* is required to be completed.
* Supervisor approval prior to conducting this activity is required.
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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.*  |
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|  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. |
|  [ ]  Will any staff require initial and/or ongoing training for the safe use of this plant/equipment?If yes, give details:  |
|  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: **Safety induction and only under direct 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 members 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 |
|  X This plant/equipment complies with relevant safety standards |
|  Further information if required:  **No grinder with disc size of over 125mm to be used.** |

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)* |
| --- | --- | --- | --- | --- |
| **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 power tools, including all cordless angle grinders, are substituted or replaced with less hazardous alternatives.
 | [ ]  | [ ]  | **Supervisor to consider usage requirements and substitutions** |
| 1. All necessary guards and safety devices are in place protecting workers from all moving parts, particularly the rotating abrasive disc.
 | [ ]  | [ ]  | **Disc guard and handle to be used at all times** |
| 1. Staff and members training is provided to minimise exposure to these hazards and risks.
 | X | [ ]  | **Induction training** |
| 1. Safe operating procedures (SOPs) are available and clearly displayed for all plant and machinery – including all portable cordless power tools.
 | [ ]  | [ ]  | **With equipment and in SOP folder** |
| 1. Ensure a visual check is made of the abrasive grinding or cutting disc prior to each use. Replace damaged discs.
 | X | [ ]  | **Supervisor pre-flight checklist** |
| 1. Warning “Danger” tags (or similar) are affixed to all portable cordless power tools or their battery chargers when under repair or maintenance preventing workers from using them.
 | X | [ ]  | **LOTO procedures** |
| 1. ““Safe Working Zones” are clearly defined. Where practical, all angle grinding activities are isolated away from others.
 | X | [ ]  | **Supervisor to assess workspace for usage requirements** |
| 1. Operators are required to remove all jewellery, tuck in loose clothing and tie back long hair.
 | X | [ ]  | **As per SOP** |
| 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, dust on floors, 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 to battery chargers, etc.
 | X | [ ]  | **Anti-slip mats available if required** |
| 1. Procedures are in place for the disposal of all waste materials around all work spaces where any cordless angle grinding activities are to be performed.
 | X | [ ]  | **Storage & waste disposal procedures** |
| 1. Staff training is provided to minimise exposure to these hazards.
 | X | [ ]  | **General induction training and housekeeping procedures** |
| **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?* **Vibration**

Is the normal operation of this plant likely to create severe or excess vibration that could be transferable to the operator?* **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 cordless power tools are regularly maintained to help minimise the risk of exposures to these hazards.
 | X | [ ]  | **Routine checks and maintenance** |
| 1. All portable cordless power tool maintenance is documented.
 | X | [ ]  | **Service records** |
| 1. Exposure to noisy workshop environments is monitored and evaluated regularly for all workers.
 | X | [ ]  | **Active monitoring by Supervisor. Isolation of works if required** |
| 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 and workspace assessment** |
| 1. Staff and member training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Equipment safety induction** |
| 1. All ducted fume extraction systems are connected and operational, fully maintained and cleaned as required.
 | X | [ ]  |  **As per workspace risk assessment** |
| 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 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. Visually checks are made of all portable cordless power tools, their electrical switches, plugs, leads and battery charges.
 | X | [ ]  | **Routine checks and maintenance**  |
| 1. Electrical safety inspections, testing and tagging etc. are completed regularly as per guidelines for all cordless portable power tool battery chargers.
 | X | [ ]  | **Annually. As per QLD WHS requirements**  |
| 1. Warning “Danger” tags (or similar) are affixed to all portable cordless power tools or their battery chargers when under repair or maintenance preventing workers from using them.
 | X | [ ]  | **LOTO procedures**  |
| 1. Electrical maintenance on all portable cordless power tools and chargers is documented.
 | X | [ ]  | **Electrical register**  |
| **Exposure:*** **Heat, Burns and** **Scalds**

Could the plant operator be exposed to heating elements, exposed flame, flashback, molten metals or hot fluids likely to cause scalding or burning? Humid and hot work environments are often uncomfortable resulting in stress and low productivity.* **Friction**

Is the plant likely to generate heat by friction? Could the plant operator accidentally come into contact with moving materials or machinery components resulting in friction burns to the skin, particularly hands?* **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 wood dust particulates, etc? | 1. Portable cordless power tools are regularly maintained to help minimise the risk of exposures to these hazards.
 | X | [ ]  | **Routine checks and maintenance**  |
| 1. All portable cordless power tools and charger maintenance is documented.
 | X | [ ]  | **Service records** |
| 1. Any hazardous waste materials or toxic dusts and gases resulting from this metal grinding process are monitored.
 | X | [ ]  | **Active monitoring and housekeeping procedures**  |
| 1. Staff and member training is provided to minimise exposure to these hazards.
 | X | [ ]  | **Equipment induction** |
| 1. “Safe Working Zones” are clearly defined. Where practical, all angle grinding activities are isolated away from others.
 | X | [ ]  | **Supervisor to address requirements before starting works** |
| 1. All appropriate and 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, practical work benches are planned and adjusted to a comfortable work height thus minimising any unsafe or excessively strenuous manual tasks.
 | X | [ ]  | **Non-flammable surface and metal clamping tools** |
| 1. Sufficient workspace is provided to help ensure unobstructed, safe operation.
 | X | [ ]  | **Supervisor to assess workspace requirements** |
| 1. Floors are regularly cleaned and free of excessive waste materials and other objects in all workspaces where metal grinding activities are performed.
 | X | [ ]  | **As per standard housekeeping procedures** |
| 1. Staff training is provided with regard to manual handling techniques and procedures to minimise exposure to these hazards.
 | X | [ ]  | **Staff safety and manual handling inductions.** |
| **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? Could fire and explosion also result from a build-up of wood dust under the table saw, in the dust extraction system or in confined ceiling spaces? | 1. All ducted dust, fumes and vapour extraction systems are regularly maintained and cleaned.
 | X | [ ]  | **As per standard housekeeping procedures**  |
| 1. Fire extinguishers of the correct type are readily available in all workspaces and positioned near exit doorways.
 | X | [ ]  | **As per Australia Standards**  |
| 1. Staff training is provided regarding procedures for the correct and appropriate use of fire safety equipment.
 | X | [ ]  | **Staff Fire & Evac training.** |
| 1. Exits from buildings and other work areas are defined and access to them kept clear of obstructions.
 | X | [ ]  | **As per Australian building codes** |
| 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: 04/02/20 |
| **[ ]**  | 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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