

# Numinbah Valley Environmental Education Centre

## Curriculum Activity Risk Assessment

### Activity Details

CARA Creation Date: 16-Apr-2024			
Activity:	<b>Science experiments, investigations and activities</b>		
Activity Scope:	<p>This guideline is provided to support schools in implementing the <a href="#">Managing risks in school curriculum activities procedure</a></p> <p>The <a href="#">CARA planner</a> must be used for the specific school context in conjunction with this guideline considering additional risks, hazards and controls and including environmental, facility, equipment and student considerations</p> <p>For activities beyond the scope of this guideline, complete a CARA record using the <a href="#">CARA generic template</a></p> <p><b>This guideline relates to student participation in science experiments, investigations and activities (including fieldwork) to support curriculum delivery within, and external to, a science laboratory.</b> These activities may involve the use of a range of laboratory equipment (e.g. glassware, heating equipment), digital equipment and physical, chemical and/or biological materials.</p> <p>Depending on the scope of this activity, other risk assessments may be required when planning. Curriculum activities encompassing more than one CARA guideline (e.g. <a href="#">Marine organism activities</a> as part of fieldwork to investigate shorelines) must comply with the requirements of all CARA guidelines appropriate to the activity.</p> <p>For curriculum activities involving biological material (e.g. studying biological specimens, tasting food samples grown in the school garden) consult the <a href="#">Biological activities</a> activity guideline.</p> <p>For curriculum activities involving the introduction of agents or conditions that may contaminate food, consult the <a href="#">Food experimentation</a> activity guideline.</p> <p>For curriculum activities involving observing and handling animals and animal remains, consult the <a href="#">Animal observation and handling</a> activity guideline.</p> <p>For curriculum activities involving observing and handling marine animals and organisms, consult the <a href="#">Marine organism activities</a> activity guideline.</p> <p>For activities conducted at a non-Department of Education venue, and/or when engaging external expertise, request written risk assessment advice and attach it to this CARA record.</p> <p>For activities conducted off-site, schools must comply with the <a href="#">School excursions</a> and <a href="#">International school study tours</a> procedure</p>		
Guidelines:	<a href="https://education.qld.gov.au/curriculum/stages-of-schooling/CARA/activity-guidelines">https://education.qld.gov.au/curriculum/stages-of-schooling/CARA/activity-guidelines</a>		
Activity Description:	Energy Trailer. Students are shown a number of models/demonstrations around our purpose built trailer that highlight different ways energy is transferred and transformed.		
Inherent Risk Level:	Medium		
Inherent Risk Level Description:	Activities involving medium risk chemicals, plant, equipment and/or materials e.g. using heat, moderate pressure or partial vacuums, mains-voltage power sources, biological materials, and low-speed mechanical and/or moving devices or objects.		
Start Date:	Monday, 29 April, 2024	End Date:	Sunday, 29 April, 2029
On School Grounds:	Yes	Is parental permission required for this activity?	No

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### Activity Requirements

Unfamiliar activities (e.g. from online sources) must be trialled without students to identify foreseeable hazards, plan controls, ensure processes are appropriate and educational outcomes outweigh the risks of the activity.

Additional information used to support student safety in the activity (e.g. resources from [Australian Science Teachers Association](#) or online risk assessment tools) must be attached this CARA record.

#### Students

Schools must consider age, maturity and skill level of students when planning curriculum activities. Adjustments are required for [students with disability](#) to support access and participation in the curriculum. Consult with the parents/carers of students with disability, or when appropriate the student, to ensure risks related to their child's participation in the activity are identified and managed.

Schools must consult current student medical information and/or health plans in accordance with the [Managing students' health support needs at school](#) procedure. Record information about any student condition (e.g. physical or medical) that may inhibit safe engagement in the activity and include specific support measures within emergency procedures.

#### Emergency and first-aid

Emergency plans and injury management procedures must be established for foreseeable incidents (e.g. laceration, gas leak, [snake bites](#) during fieldwork).

Adult supervisors must have:

- emergency contact details of all participants
- a medical alert list and a process for administering student medication;
- communication equipment suitable to conditions (e.g. mobile phone) and a process for obtaining assistance and/or receiving emergency advice.

Safety procedures must be determined for the location (e.g. using equipment, managing broken glass) and are to be informed by details provided on manufacturer's instructions, product labels, vendor SDS and SOP as relevant.

Access is required to [First aid equipment](#) and consumables suitable for foreseeable incidents.

An adult with current emergency qualifications is required to be quickly accessible to the activity area. Emergency qualifications include:

- [HLTAID009](#) Provide cardiopulmonary resuscitation (CPR) or equivalent; and
- [HLTAID011](#) Provide first aid or [SISSS00118](#) - Sports Trainer Level 1 or equivalent.

#### Induction and instruction

Induction is required for all adult supervisors on emergency procedures (e.g. location of first aid support and equipment, location and use of electrical isolation switch) and safety procedures (e.g. identification of ingestion hazards, defined procedures in a published experiment, disposal of wastes/sharps). If the activity is conducted at an off-site facility, induction is to be informed by advice provided in consultation with expertise at the venue.

Instruction is required for students and adult supervisors on correct techniques (e.g. managing spills, first aid support, correct set-up and operation of equipment). Teacher demonstrations are encouraged to exemplify safe and hygienic practices and techniques.

When conducting fieldwork, participants must receive prior instruction on potential hazards (e.g. thorned flora, steep slopes), basic first aid procedures for biological hazards (e.g. ticks, leeches); appropriate behaviours to help keep themselves safe during the activity (e.g. observe wildlife from a safe distance, keep to the path); the process if lost or separated from the group.

#### Consent

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<a href="#">Parent consent</a> is required for all activities conducted off-site and for extreme risk activities conducted on-site. It is strongly recommended for high risk activities conducted on-site.	
<b>The activity requirements have been met and any additional requirements for the activity are included below or attached.</b>	<input checked="" type="checkbox"/>

### Risk Management Details

Supervision	
For activities with students with a medical condition or disability that may impact on safety during the activity, consultation with parents is required prior to allocating supervision to determine the impact of students' medical condition or disability on safety during the activity.	<input type="checkbox"/>
The number of adult supervisors required to fulfil emergency and supervision roles must consider the nature of the activity, students' ages, abilities and specialised learning, access and/or health needs.	<input type="checkbox"/>
Before the activity, all adult supervisors must be familiar with the contents of the CARA record.	<input type="checkbox"/>
During the activity, all adult supervisors: <ul style="list-style-type: none"> <li>• must be readily identifiable</li> <li>• must closely monitor students with health support needs</li> <li>• must comply with control measures from the CARA record and adapt as hazards arise</li> <li>• must suspend the activity if the conditions become unfavourable (e.g. extreme temperatures).</li> </ul>	<input type="checkbox"/>
Do not allow experiment products from the laboratory (e.g. reactant products, food products) to be removed by students or taken home.	<input type="checkbox"/>
Supervision requirements determined as part of booking process. Visiting school to identify and provide additional supervision for identified students as required.	

Supervisor Qualifications	
All adult supervisors must comply with the <a href="#">Working with Children Authority - Blue Cards</a> procedure and be able to identify, and respond to, risks or hazards that may emerge during the activity.	<input checked="" type="checkbox"/>
A registered teacher must be appointed to maintain overall responsibility for the activity.	<input checked="" type="checkbox"/>
At least one adult supervisor is required to be:	
A registered teacher with competence (knowledge and skills) in the activity and its potential hazards	<input checked="" type="checkbox"/>
An adult supervisor, working under the direct supervision of a registered teacher, with competence (knowledge and skills) in the activity and its potential hazards.	<input checked="" type="checkbox"/>
or	

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Facilities and Equipment	
Consult <a href="#">Chemicals in curriculum activities</a> template for support in assessing the risks of chemicals used with/by students in curriculum activities.	<input type="checkbox"/>
If a CARA record is required in OneSchool, a summary of chemicals, plant, equipment and/or materials used in the activity must be provided by entering directly onto the CARA record in OneSchool or by attaching a summary. Sample templates are provided on <a href="#">Chemicals in curriculum activities</a> and <a href="#">Plant, equipment and materials in curriculum activities</a> .	<input type="checkbox"/>
Location must be suitable for the activity being undertaken, including sufficient space, adequate lighting and ventilation to ensure safe participation and that safety rules and procedures can be followed. This may be in a specialised facility (e.g. laboratory) or other suitable location (e.g. incursion, field trip). Undertake a reconnaissance of new or infrequently used locations to ascertain suitability.	<input checked="" type="checkbox"/>
All emergency equipment and processes (e.g. shut-off switches) are functional prior to commencing the activity.	<input type="checkbox"/>
Participants must wear <a href="#">Personal protective equipment</a> appropriate to the activity (e.g. non-porous enclosed footwear, apron/coat, lab-standard eye and face protection, gloves).	<input type="checkbox"/>
Equipment must be well-maintained, transported safely and stored appropriately. Conduct a visual inspection of equipment (including <a href="#">portable electrical equipment</a> ) to identify damage and remove from use.	<input type="checkbox"/>
Aids for safe handling, lifting and carrying (e.g. guards, safety steps and mobile trolleys), as appropriate.	<input type="checkbox"/>
Clean up equipment as necessary e.g. dustpan, breakages bin, and spill kit.	<input type="checkbox"/>
Follow the <a href="#">Safety Guide for the Use of Radiation in Schools (RPS 18)</a> and manufacturers' instructions when using lasers. Use the lowest power laser product required for the particular purpose. It is expected that only Class 1 and Class 2 laser products are used in schools.	<input type="checkbox"/>
Gloves or cloth available for touching solar thermal heating equipment.	

### Hazards and Control Measures

Further to those listed, include any additional hazards and control measures considering the local context of the activity.

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<b>Environmental hazards</b>	
<i>Animal bites/stings</i> <ul style="list-style-type: none"> <li>Respond appropriately to approaching wildlife.</li> <li>Do not to feed wildlife.</li> <li>Use insect repellent, as outlined in <a href="#">Insect viruses and allergies</a>.</li> </ul>	<input type="checkbox"/>
<i>Biological material</i> <ul style="list-style-type: none"> <li>Implement protection and handling processes to avoid accidental contact (e.g. rinsing equipment after use). Use only the smallest quantity of biological material that will guarantee the viability of the experiment.</li> <li>Manage bodily substances (e.g. blood) and open wounds before, during and after the activity. Consult <a href="#">Infection control guidelines</a> and Queensland Health's <a href="#">Exclusion periods for infectious conditions</a> poster for hygienic practices and first aid. <a href="#">Wash hands</a> and other contaminated areas of the body with soap and water before leaving the activity site.</li> </ul>	<input type="checkbox"/>
<i>Environmental conditions</i> <ul style="list-style-type: none"> <li>When participating outside: <ul style="list-style-type: none"> <li>Follow the school's <a href="#">sun safety strategy</a>.</li> <li>Assess weather (<a href="#">Bureau of Meteorology</a>) and environmental conditions prior to participation.</li> <li>Follow the <a href="#">Managing excessive heat in schools</a> guidelines when participating in very hot or extreme heat conditions.</li> <li>Ensure drink breaks occur regularly. Make water available for individual participants between drink breaks.</li> <li>Monitor participants for cold related illness (e.g. hypothermia) in cold weather conditions.</li> <li>Include local hazards and control measures from sand/mud/dirt/water etc within the safety procedures.</li> </ul> </li> </ul>	<input checked="" type="checkbox"/>
<b>Facilities and equipment hazards</b>	
<i>Electricity</i> <ul style="list-style-type: none"> <li>Electrical or extension leads must not pose a tripping hazard. Secure (e.g. tape down) and cover for protection.</li> <li>Consider the placement of technology devices (e.g. tablets, laptops) and the peripherals (e.g. cords, mouse) during activities to avoid contamination by chemical/biological materials or contact with water.</li> </ul>	<input type="checkbox"/>
<i>Faulty or dangerous equipment</i> <ul style="list-style-type: none"> <li>Check equipment for damage before and during the activity.</li> <li>Comply with control measures provided on the SOP or manufacturer's instructions. See the <a href="#">Plant, equipment and materials in curriculum activities template</a> for details of specific risk management practices.</li> <li>Restrict student access to any equipment that requires thermal insulation (e.g. liquid nitrogen, incubator).</li> </ul>	<input type="checkbox"/>

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<p><i>Hazardous chemicals</i></p> <ul style="list-style-type: none"> <li>Comply with control measures for preparation, use and disposal of chemicals provided on the vendor SDS in the school Chemwatch manifest and/or safety instructions on the product label. See the <a href="#">Chemicals in curriculum activities template</a> for details of specific risk management practices for each Chemwatch hazard colour rating.</li> <li>All chemicals required for the decontamination processes must be arranged in advance and be readily available.</li> <li>Implement protection and handling processes to avoid accidental contact (e.g. rinsing equipment after use). Use only the smallest quantity that will guarantee the viability of the experiment.</li> <li>Manage spills immediately.</li> </ul>	<input type="checkbox"/>
<p><i>Heat sources</i></p> <ul style="list-style-type: none"> <li>Participants must be familiar with the safe use of heat sources and/or hazardous substances. This includes, but is not limited to: keeping burners on low heat or orange flame while not directly in use; using small quantities of combustible substances only; keeping combustible or toxic substances away from naked flames; and using appropriate water-bath techniques.</li> <li>Clearly sign/label equipment with hot surfaces and allow to cool before being returned to storage.</li> </ul>	<input checked="" type="checkbox"/>
<p><i>Wastes</i></p> <ul style="list-style-type: none"> <li>Dispose of waste according to established safety procedure as soon as possible after the activity.</li> </ul>	<input type="checkbox"/>
<p><b>Student considerations</b></p> <p><i>Heavy objects</i></p> <ul style="list-style-type: none"> <li>Use correct <a href="#">manual handling</a> processes when lifting, lowering, pushing, pulling or carrying.</li> </ul>	<input type="checkbox"/>
<p><i>Student issues</i></p> <ul style="list-style-type: none"> <li>Where individual experimental investigations are undertaken, students must have complete and appropriate procedures in place that identify and manage hazards associated with their activity.</li> <li>Remove accessories (e.g. jewellery, lanyards) before participating.</li> <li>Ensure fingernails and hair and clothing (e.g. long hair, loose clothing) do not pose a hazard.</li> <li>Monitor and enforce the correct use of equipment and materials and safe movement around the area.</li> <li>Handle all biological and chemical materials with the assumption that they are potentially hazardous.</li> <li>Account for all equipment, chemicals and subsidiary resources (e.g. matches, unused samples) at the end of the activity.</li> </ul>	<input type="checkbox"/>
<p>In addition to the above, for off-site activities:</p> <ul style="list-style-type: none"> <li>Implement procedures (e.g. buddy system, roll marking mechanisms) to account for all participants.</li> <li>Ensure staff can easily recognise those students with health support needs and are familiar with their needs when participating off-site.</li> </ul>	<input type="checkbox"/>

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Electrical power source- The energy trailer generates its own power and could be a source of electrocution. Trailer is properly serviced to ensure safety and students are supervised at all times. Trailer is locked when left unattended. Safety switches are installed and must be tested before activity commences.

Fire Risk- Equipment such as steam engine, solar oven and parabolic dishes can generate high heats and fire. Students should be kept behind safety barrier or be given specific safety instructions and safety equipment if allowed to use equipment.

Glare- Parabolic dishes focus sunlight to a point and if misused can cause damage to eyes or burn skin after long exposure. Students are to be supervised and kept back from parabolic dishes.

Burns- Steam engines, solar ovens, and parabolic dishes could result in burns from hot liquids, combustible fuels or contact with a hot surface. Students are instructed about dangers & handling processes, kept at safe distance, signs are placed to warn of hazards and/or students are supervised at all times.

Non-potable water- Display uses water which is not potable. Students are supervised.

Trailer- When trailer is detached from vehicle, ensure it is parked on a flat surface, apply the brake and lower support legs to ensure trailer does not tip.

Wind Turbine- Be mindful of pinching fingers or hand between metal tubes and operate winch carefully. Winch can cause damage to hands. Seek proper instructions before using winch and never allow students to operate. Wind turbine is not a risk to students when in position because it is several meters above head height.

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### Planning Considerations

#### Which students will be involved?

- Consider the number of students, size of student groups and students' capabilities e.g. age, experience, competence, fitness, maturity.
- Consider any individual student needs e.g. personalised learning, support provisions (including behaviour support plans), health management (including health plans and prescribed medication requirements).

#### Where will the students be?

- Consider the location of the activity e.g. remote/easily accessible, public /private, school/classroom/workshop/other.
- Is the number of students appropriate for the available space?
- If outdoors – sunsafe strategies are implemented; weather and environmental conditions are assessed before and during activity (e.g. temperature, storms, water currents, tides); and strategies to reduce the likelihood of viruses, allergies and skin infections caused by insects (e.g. ticks, mosquitoes, spiders) and other animals are applied.
- The site is checked for hazards (e.g. poisonous plants, dangerous animals, uneven terrain, barbed wire,) and necessary controls implemented.
- Activities are appropriately situated in relation to buildings, pedestrians, members of the public, vehicles and other activities e.g. designated areas for activity, spectators and vehicles are established.

#### What will the students be doing?

- Consider the nature and duration of the activity i.e. need for drinking water, food, rest, appropriate clothing, warm-up and warm-down.
- Instruction in rules and pre-requisite skills is provided.
- Student skills are developed in a progressive and sequential manner.
- First aid and emergency medical treatment provisions are appropriate for the type of activity and location e.g. first aid kit, first aid trained personnel, Ventolin®, Epipen®, and students' personal prescribed medications as required in health plans are available.
- Emergency response strategies are in place e.g. communication plans (e.g. mobile phone, walkie talkie), safety induction, evacuation plans.
- Hair, clothing, footwear and jewellery are worn in a manner that is appropriate and safe for the activity.
- Personal items, e.g. drink bottles, towels and mouthguards, will not be shared between students.

#### What will the students be using?

- Instruction in safety procedures and safe handling of equipment is provided.
- Equipment is suitable for the activity, properly maintained, appropriately used and complies with the relevant safety standard.
- [Relevant department procedures and guidelines](#) are adhered to for the use of equipment and work processes.

#### Who will be leading the activity?

- A registered teacher has overall responsibility for the activity.
- Sufficient adult supervision is in place to manage the activity safely (including in emergency situations).
- The activity leader has the competence (knowledge and skills) to plan, induct, instruct and manage the activity safely for students and others.
- There are sufficient adults present with current First Aid qualifications (including CPR) or ready access to qualified first aid personnel.
- Blue Card requirements are adhered to for leaders/volunteers.

I have incorporated the above factors when planning my risk management strategies for this activity.

Additional activity-specific requirements for students with specialised learning needs are provided in the Other Details box below.

Booking school to identify and provide additional supervision for identified students as required.