

Risk Assessment for Science and Technology Programmes

Hazard/Risk	Who could be affected by hazard.	Likelihood of being affected	Worst consequence of being affected	Risk Level	How hazard/risk is mitigated	Residual risk level
<u>BOAT CONSTRUCTION:</u> Cut or other injury caused by sharp tools or boat building materials e.g. nails.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of dangers caused by unsafe use of tools and construction methodology. FST to demonstrate the safe methods of construction, e.g. using hard surface to push nails through foam. FST to set up 'Chandlers' bench on which to work. All cutting and sawing to be done by FST on stable protected surface. FST to instruct VC/VSA on safe conduct around bench. VC warned not to crowd bench or go behind bench at any time. FST to keep all tools unless being used behind bench in boxes. Tools should never be left unattended on the bench. Tool boxes to be stored in locked cupboards when not in use. 	LOW
Puncture wound or similar caused by boat keel.	FST VC,VSA	2	10	20	<ul style="list-style-type: none"> FST to put on boat keels ensuring they push against steady hard surface. FST keep boat keels away from VSA/VC during session to avoid anyone attempting to 'finish' their boat during session. 	LOW
Inhalation of dust or similar causing respiratory discomfort or asthma.	FST VSA VC CGS HCSCS	1	75	75	<ul style="list-style-type: none"> FST to warn of risk. FST ensures that sandpaper is not available for VC to sand boats. Materials for boats to be cut with knife rather than with saw to reduce the volume of dust. Polystyrene to be used rather than fibre- 	LOW

					glass type board for boat hull. • FST to ensure adequate maximum ventilation conditions. • FST to ensure workspace as clear as possible and dust free at the end of every session.	
Eye injury or similar puncture type wound caused by boat mast.	FST VSA VC	2	5	10	• FST to warn of danger. • FST to ensure a coloured flag is added to the top of the mast to make it easily seen • In Trade and Travel boat game flags added to the boats to make more obvious. • VC warned not to run or rush about during session. • FST should remind VC of safety instructions prior to leaving work room and heading to sailing site. • FST and VSA should supervise the safe movement of group to water considering above.	LOW
Burn from glue gun.	FST VSA VC	2	5	10	• FST to warn of danger and set up table away from work area for safe use of gun. • FST to instruct individual to bring sails to bench rather than whole group. • Use cool melt guns and glue. • Guns only to be used by FST and/or VSA never VC.	LOW

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<u>BOAT SAILING:</u> Fall into moat or other body of water with risk of drowning.	FST VSA VC	1	75	75	<ul style="list-style-type: none"> FST to warn of danger and ensure with help of VSA that all VC stay 2 metres from edge At all times at least one adult should be between group and water. Extra care should be taken in wet and slippery conditions FST assessing conditions and extending safety distance if necessary. FST to check site after group has left and check with VSA group numbers. 	LOW
Stomach upset, illness or disease, contracted from water.	FST VSA VC	2	75	150	<ul style="list-style-type: none"> FST should warn the group of risk. FST to instruct anyone who has come into contact with water to immediately wash his or her hands after activity. 	LOW
<u>ROCKETS:</u> Cut or other injury caused by sharp tools or rocket building materials.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of unsafe use of tools and construction methodology. FST to demonstrate the safe use and methods of construction. FST to set up workbench on which all cutting and sawing is to be completed by FST only on stable protected surface. FST to instruct VC/VSA on safe conduct around bench. VC warned not to crowd bench or go behind bench at any time. FST to keep all tools behind bench in boxes. Tools should never be left unattended on the bench. Tool boxes to be stored in locked cupboards when not in use. 	LOW
Burn from glue gun or hot melt glue.	FST VSA VC	2	5	10	<ul style="list-style-type: none"> FST to warn of danger and set up table away from work area for safe use of gun. FST to instruct individual to bring sails to bench rather than whole group. 	LOW

					<ul style="list-style-type: none"> • Use cool melt guns and glue. • Guns to be used only by FST or VSA 	
Fire caused by rocket fuel being ignited before launch.	FST VSA VC CGS KS	1	75	75	<ul style="list-style-type: none"> • Rocket fuel to be kept sealed in a box. • Rocket fuel box to kept in locked cupboard at all times unless it is being used. • FST to ensure that rocket fuel is inserted at the time of launching NOT before. • The launch site is isolated from any Centre building, houses and combustibles. • FST to ensure that rockets used are those which need an electronic ignition system rather than combustible fuse. 	LOW
Burn or other impact type injury caused by rocket, or rocket fuel.	FST VSA VC CGS KS GP	1	75	75	<ul style="list-style-type: none"> • Rocket fuel to be kept sealed in a box. • FST to ensure that rocket fuel is inserted at the time of launching NOT before. • The launch site is isolated from any Centre building, houses and combustibles. • At launch a minimum distance of 10 metres is to be maintained between rocket and FST, 75 metres between rocket and observers. • FST to instruct observers on firing sequence to ensure their attention, it must be an audible countdown with the firing on zero. • FST to instruct and demonstrate emergency procedure if rocket misfires or veers off course. VC drop to the floor on the spot face down after direct instruction from FST/VSA. • FST to select fuel which reflects the wind direction and strength. A full description to be kept inside lid to box. 	LOW
Burn or impact injury due to unexpected launch.	FST VSA VC CGS KS GP	1	75	75	<ul style="list-style-type: none"> • FST to instruct observers on firing sequence to ensure their attention, it must be an audible countdown with the firing on zero. • FST to ensure that when they set up rocket to fire that circuit is not connected to battery pack until on FST direction countdown begins. • In the event of a misfire FST is not to return 	LOW

					<p>the rocket unless it has been disconnected from battery pack, and even then with caution.</p> <ul style="list-style-type: none"> Battery pack and rocket fuel to be kept separate at all times 	
Injury caused by sharp hedges, barbed wire or fencing whilst retrieving 'fired' rockets.	FST VSA VC CGS	2	10	20	<ul style="list-style-type: none"> FST to ensure that they are the only individuals to attempt retrieval of the rockets after launch. If rockets are 'hung up' or in difficult position they should return later with CGS and appropriate equipment to retrieve rocket safely. FST should ensure that fallen rockets in unsafe or fenced off locations are not retrieved by VSA/VC. 	LOW
<u>KITES:</u> Cut or other injury caused by sharp tools or rocket building materials.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of dangers caused by inappropriate use of tools and construction methodology. FST to demonstrate the safe use and methods of construction, e.g. using hard surface to push pencils through plastic. FST to set up workbench on which all cutting and sawing is to be completed by FST only on stable protected surface. FST to keep all tools unless being used in boxes. Tools should never be left unattended on the bench/table. 	LOW
<p>Trip and/or fall caused by kite string</p> <p>Cut caused by thin nylon kite string.</p>	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of risk. FST to ensure adequate space available to safely issue kite string and then for string to be immediately wound onto handle. FST to ensure VC sits in suitable place to wind on string, they should not be wandering about whilst doing this. 	LOW
Restriction of blood flow caused by thin nylon string knotting	FST VSA VC	1	75	75	<ul style="list-style-type: none"> FST to warn of risk. FST to ensure adequate space available to safely issue kite string and then for string 	LOW

and pulling tight.					<ul style="list-style-type: none"> to be immediately wound onto handle. FST to ensure VC sit in suitable place to wind on string, they should not be wandering about whilst doing this. FST to remain vigilant and have equipment necessary to cut string at hand. 	
Suffocation or asphyxiation caused by plastic bag over head or mouth.	VC	1	75	75	<ul style="list-style-type: none"> FST to warn of danger and demonstrate the safe use of plastic bags, it must not be placed over the head or mouth under any circumstances. FST/VSA to remain vigilant at all times to closely supervise activity and ensure suitable use of materials. FST to cut (where appropriate) bags into pieces. 	LOW
KITE FLYING: Collision with obstacle or other person whilst flying kites.	FST VSA VC CGS HCS CS	2	20	40	<ul style="list-style-type: none"> FST to warn of danger and ensure that VC are directly supervised by FST/VSA. FST/VSA to ensure that there is suitable and adequate space to safely fly the kites. FST should take the weather and light conditions into account. Low light conditions and at night kite flying should not be allowed. In wet/rainy conditions the location for flying should be taken into account. FST should ensure that VSA/VC are warned of specific risks mentioned in the Risk Assessment for the chosen area of activity. FST to check venue for potential hazards before any kite flying may begin. 	LOW

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<u>TECHNOLOGY</u> <u>PROBLEM SOLVING:</u> Cut or other injury caused by sharp tools or model building materials.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of dangers caused by unsafe use of tools and construction methodology. FST to demonstrate the safe use and methods of construction. FST to set up workbench on which all cutting and sawing is to completed by FST only on stable protected surface. FST to instruct VC/VSA on safe conduct around bench. VC warned not to crowd bench or go behind bench at any time. FST to keep all tools unless being used behind bench in boxes. Tools should never be left unattended on the bench. Tool boxes to be stored in locked cupboards when not in use. 	LOW
Burn from glue gun.	FST VSA VC	2	5	10	<ul style="list-style-type: none"> FST to warn of danger and set up table away from work area for safe use of gun. FST to instruct individual to bring sails to bench rather than whole group. Use cool melt guns and glue. Guns only to be used by FST and/or VSA 	LOW
Electrical circuit causes shock or electrocution of individual.	FST , VSA VC	1	75	75	<ul style="list-style-type: none"> FST to ensure that VSA/VC are warned against connecting their circuit to the mains, only batteries must be used. FST to supply only battery packs which hold two AA batteries that have a combined charge of 3V max. FST/VSA to ensure direct supervision of VC at all times during session. 	LOW
Cut caused by broken bulb glass.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of danger. FST/VSA to remain vigilant at all times and ensure any breakage is immediately swept 	LOW

	CGS HCS CS				up using dustpan and brush. <ul style="list-style-type: none"> FST to ensure the floor of workspace is swept after use and no glass is left on floor. 	
Collision, trip or fall whilst lights are switched off for light testing at end of the session.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of risk and ensure all seated, and remain seated, before the lights are switched off. FST to have designated VC to switch lights off and on at FST instruction so nobody is walking about with lights out. If FST decides to change lighthouse keeper they should ensure that the lights are switched back on whilst changes are made. 	LOW
THE PROPERTIES OF MATERIALS – ICEMAN’S HANDS: Slip or fall on slippery floor due to melted water.	FST VSA VC CGS HCS CS	2	20	40	<ul style="list-style-type: none"> FST to warn of danger and watch ‘hands’ during the session for any leakage. FST to ensure rubber glove for hand is sealed to prevent any water escaping. FST to position the experiment away from thoroughfares in safe location, e.g. on tables at the back/front or under them. FST to ensure than a cloth or mop is available to clean up spilt water 	LOW
PROPERTIES OF CORN FLOUR: Discomfort or distress caused by corn flour in the eyes or mouth.	FST, VSA, VC, CGS	1	2.5	2.5	<ul style="list-style-type: none"> FST to warn of possible risk and to directly supervise the experiment. FST to ensure that suitable rinsing fluid is available in/near to workspace. FST/VSA to ensure that once complete all experimental materials are returned and properly disposed of. 	LOW
Food allergy to flour.	FST, VSA, VC, CGS	1	40	40	<ul style="list-style-type: none"> FST to warn all VSA/VC that it is flour, although corn flour and if they have an allergy then they need to ensure they are not close to the experiment or come into contact with the flour. 	LOW
BALLOON BUGGIES: Injury caused by sharp scissors or tools.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of danger and demonstrate the safe use of equipment. FST/VSA to directly supervise VC at all times and ensure suitable use of equipment. 	LOW
Stomach upset, illness	FST VSA	2	5	10	<ul style="list-style-type: none"> FST to warn of the risk and ensure that 	LOW

or virus caused/spread by blowing up shared balloon to drive buggy.	VC				there are enough balloons for each VC to have their own. <ul style="list-style-type: none"> FST/VSA to ensure that balloon is changed if it 'blasts off' onto the floor. FST/VSA/VC to wash hands after the activity with soap and water. 	
Impact injury caused by 'flying' balloon.	FST VSA VC	1	20	20	<ul style="list-style-type: none"> FST to control access to the balloons prior to launch and collect buggies and balloons after launch. VSA to be given the buggies to take back to school rather than giving them to the VC during the session. 	LOW

LIGHTHOUSES: Electrical circuit causes shock or electrocution of individual.	FST , VSA VC	1	75	75	<ul style="list-style-type: none"> FST to ensure that VSA/VC are warned against connecting their circuit to the mains, only batteries must be used. FST to supply only battery packs which hold two AA batteries that have a combined charge of 3V max. FST/VSA to ensure direct supervision of VC at all times during session. 	LOW
Cut caused by broken bulb glass.	FST VSA VC CGS HCS CS	2	10	20	<ul style="list-style-type: none"> FST to warn of danger. FST/VSA to remain vigilant at all times and ensure any breakage is immediately swept up using dustpan and brush. FST to ensure the floor of workspace is swept after use and no glass is left on floor. 	LOW
Collision, trip or fall whilst lights are switched off for light testing at end of the session.	FST VSA VC	2	10	20	<ul style="list-style-type: none"> FST to warn of risk and ensure all seated, and remain seated, before the lights are switched off. FST to have designated VC to switch lights off and on at FST instruction so nobody is walking about with lights out. If FST decides to change lighthouse keeper they should ensure that the lights are switched back on whilst changes are made. 	LOW

FUN WITH FORCES

Hazard/Risk	Who could be affected by hazard.	Likelihood of being affected	Worst consequence of being affected	Risk Level	How hazard/risk is mitigated	Residual risk level
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Injury due to being hit by water rocket	FST VSA VC	1	5	5	<ul style="list-style-type: none"> FST instructs group how to do activity safely (see task card). No one to stand between rocket tube and target while firing in progress. No one to stand directly behind rocket while firing is in progress. VST to supervise this activity where possible. 	LOW
Injury due to being hit by scaffold pole or being crushed by a falling tractor tyre	FST VSA VC	5	10	50	<ul style="list-style-type: none"> Handle end of scaffolding poles to be fitted with soft padding such as pipe insulation, to reduce harshness of impact should a person be hit with it. FST to instruct children to keep poles clear of payload when not using them to lift. (If a pole is left over the pivot and the payload falls onto it, the end of the pole will spring up and could hit somebody in the face.) FST instructs users to keep hold of the end at all times while using it to lift the payload. FST to supervise this activity in particular and task other VST to supervise the other activities. FST to instruct users to stay on the outside of the pivot points and not touch the payload by hand. In other words, users need to stay a few metres away from the payload in case it topples over on top of them. The activity could be made safer by swapping the tractor tyres for rocks. 	LOW
Injury due to falling off the seesaw.	FST VSA VC CGS KS	1	3	30	<ul style="list-style-type: none"> FST to make sure that the seesaw is balanced securely and unlikely to slip off the pivot point. FST to instruct users to not jump off the seesaw at any point. FST to instruct users not to step off the end of the seesaw but to get on and off it at the pivot point where they will not cause it to spring up. 	LOW
Injury caused while	FST	1	2	20	<ul style="list-style-type: none"> FST to ensure users wear waterproofs if the weather is cold 	LOW

using the water slide	VSA VC CGS KS GP				<p>to reduce likelihood of hypothermia.</p> <ul style="list-style-type: none"> • FST to ensures users only slide on the slide using the inflatable sliders. • FST to instruct users to jump onto sliders from a crouching position, rather than a standing position, to reduce the impact on landing. • FST to ensure that the end of the slide is free of obstruction to allow space for the users to slide off the end and come to a gradual stop without bumping into anything. • FST to use the plastic pegs provided to peg the slide down and ensure the pegs are flush with the ground. • If metal pegs need to be used, FST must ensure the pegs are not protruding from the ground in case a use catches them on their body as they are sliding. • VST to supervise this activity where possible. 	
Injury cause by bumping or falling during air resistance relay	FST VSA VC CGS KS GP	1	3	30	<ul style="list-style-type: none"> • FST to instruct students to leave a wide gap during take overs in the relay. (E.g. If runners pass too close to each other during take overs, they could easily trip over each other's parachutes.) 	LOW
Injury caused by rope burn or falling during tug of war	FST VSA VC CGS	2	10	20	<ul style="list-style-type: none"> • FST to instruct students to wear gloves provided in order to prevent rope burn. • FST to instruct students not to have an 'anchor man'. (E.g. no one is to wrap the rope around themselves.) • FST teaches students how to take the strain before they pull. • FST to instruct students not to let go of rope once pulling has started. • VST to supervise this activity where possible. 	LOW

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