MANCHESTER 1824

The University of Manchester

Mona Football Risk Assessment – Programming & Showcase

Date: 02/03/2023	**Assessed by:** Robotic Society	**Approved by:** Keir Groves	**Location:** Engineering building A: Ground Floor	**Assessment ref no:**	**Review date:** NA

- **This document is a continuation of the general event risk assessment and covers specific activities pertaining to the construction, testing and showcase of the robots involved in the Mona Football challenge.**
- **Location: construction – Makerspace and workstations for basic tools, 3D printing for chassis designs, Engineering A ground floor foyer for showcase.**
- **Custom arena will be constructed for the purpose of hosting the competition.**
- **Kits will be provided by external sponsor Ice9Robotics.**

For general risks associated with the use of Engineering A please see RA: RA_2023_Hackabot General Risk Assessment

Activity	**Hazard**	**Who might be harmed and how**	**Existing measures to control risk**	**Risk rating**	**Result**
Use of LiPo Batteries	Toxic fumes from damaged LiPo batteries	Attendees and organisers handling the batteries while charging or disposing of damaged batteries	• All LiPos are charged in LiPo bags. • All batteries will be checked for damage before they are allowed to be used. • If a LiPo is damaged it whilst mounted in a robot or contained in a LiPo bag. The robot or bag containing the battery will be placed immediately in a sand bin and the room to be evacuated. • A LiPo fire extinguisher will always be present when batteries are being used.	M	A
Use of makerspace	Burns, cuts	Attendees soldering their robots	• All attendees using the makerspace to construct components for their robot will be overseen by a member of staff and a qualified GTA who has had appropriate lab supervision training. – ACTION • All Attendees will be inducted on the makerspace prior to using any of the facilities. • Attendees will be instructed on the safe and appropriate practices for use of any tools of which they are unfamiliar.	L	A
Designing and production of system	Burns, cuts, punctures	People constructing the	• People constructing addons which require the use of tools which are not suitable for normal tabletop work will only do so within the makerspace. • Robots will be permitted to be at workstations.	L	A

Activity	Hazard	Who might be harmed and how	Existing measures to control risk	Risk rating	Result
			• All robots will be kept on a work surface, tested in the arena or in a large open area clear of all foot traffic only. • Attendees will be permitted to use any material which they can source for the construction of addons to their robot including 3D printers. All 3D printers will be overseen by a designated organiser and no attendee will directly interact with the printers. See **RA_2023_Hackabot General Risk Assessment.**		
Use of electrical components in the robots	Electrical Shock, Burns, Fire	Anyone handling a robot	• All robots are commercially available to buy and have been fully tested prior to being placed on the market and use within the event. • All robots are electrically tested, equipped with fuses and have limited working voltage. All electrical joints must be covered with a suitable insulator. If electrocution occurs the procedure will be to ensure that they aren't touched until they are no longer connected to the source. • If first aid is required, it will follow the procedure detailed later on in the RA. • A LiPo fire extinguisher and normal fire extinguishers will be on hand and easily accessible. The procedure will be to turn off the robot, extinguish the fire if possible and evacuate the area if needed.	L	A
Robots competing	Uncontrolled Robot could cause damage, slips, trips and falls	Anyone in the area	• Robots will only be permitted to be placed either on an elevated work surface, large clear open areas or on the floor of the arena to be tested. • Robots will only be allowed to be untethered when safe to do so in accordance with precautions outlined in **RA_2023_Hackabot General Risk Assessment**. • The arena will have sufficiently high walls to stop all possibilities of escape by the robots or balls which could result in a trip or fall. • The arena will be clearly marked, and no one will be allowed to enter or use the arena without supervision.	L	A
Action in the event of an emergency	Not being aware of the evacuation procedure in the event of an emergency. Fire Smoke	Staff, students, visitors Lack of awareness If present within the building during fire	• Induction arrangements cover security and fire awareness and include how to locate and use a fire door to exit the building and the location of the fire assembly point(s) – organisers and assisting GTA's have completed building and Makerspace induction. – ACTION • Fire alarm systems are in place and tested weekly on day at time to enable users to identify the sound of the alarm, see fire action notices in prominent corridors and at entrances to buildings. Fire alarm is tested on a Wednesday at 9.45am	L	A

Activity	Hazard	Who might be harmed and how	Existing measures to control risk	Risk rating	Result
		Burns, Smoke inhalation.	• 4 fire assembly points are located around the building. Green running man signs direct building users to the nearest route out of the building • Emergency call point located in main cores. • Fire evacuation practices are conducted annually. • Induction covers the importance of maintaining clear fire exit routes and keeping the doors closed unless essential. Induction also covers the need for high general housekeeping standards. • Ready access to fire extinguishers is available for use by trained users or anyone to aid in escape. • Organisers and GTA's will be responsible for safety and, if required, evacuation of visitors. • Evacuation marshals attend suitable training and assist where possible during evacuations during normal working hours. • Users are instructed and empowered to act if they suspect an emergency situation to activate the fire alarm to trigger evacuation of the building.		
Assembling and disassembling arena	Heavy Lifting	The members who help with the arena could suffer from a back injury	• The arena is made to be flat packed, and light enough to be easily moved by 2 people following the correct manual handling procedures. • The size of the arena will be limited to the size of one standard table top with the control hardware placed underneath the table. • Running of any power cables will be from the plugs located in the ground and will be covered if they have to travel over a certain distance. • Supervision will be undertaken to ensure a safe lifting technique. The appropriate footwear will always be worn when heavy lifting is being undertaken.	L	A

Action plan				
Ref No	**Further action required**	**Action by whom**	**Action by when**	**Done**
1.	Dynamic assessment of risk shall be conducted throughout the event. Upon any significant change organisers to assess if the event should be stopped or seek advice from approver	Organisers		
2.	Organisers to be given basic training on the operation and running of the makerspace. Ensure that all GTA's supervising are qualified to do so.	Organisers		
3.	All attendees to be inducted on the makerspace at the start of the event to ensure awareness of hazards and use of equipment	Organisers		

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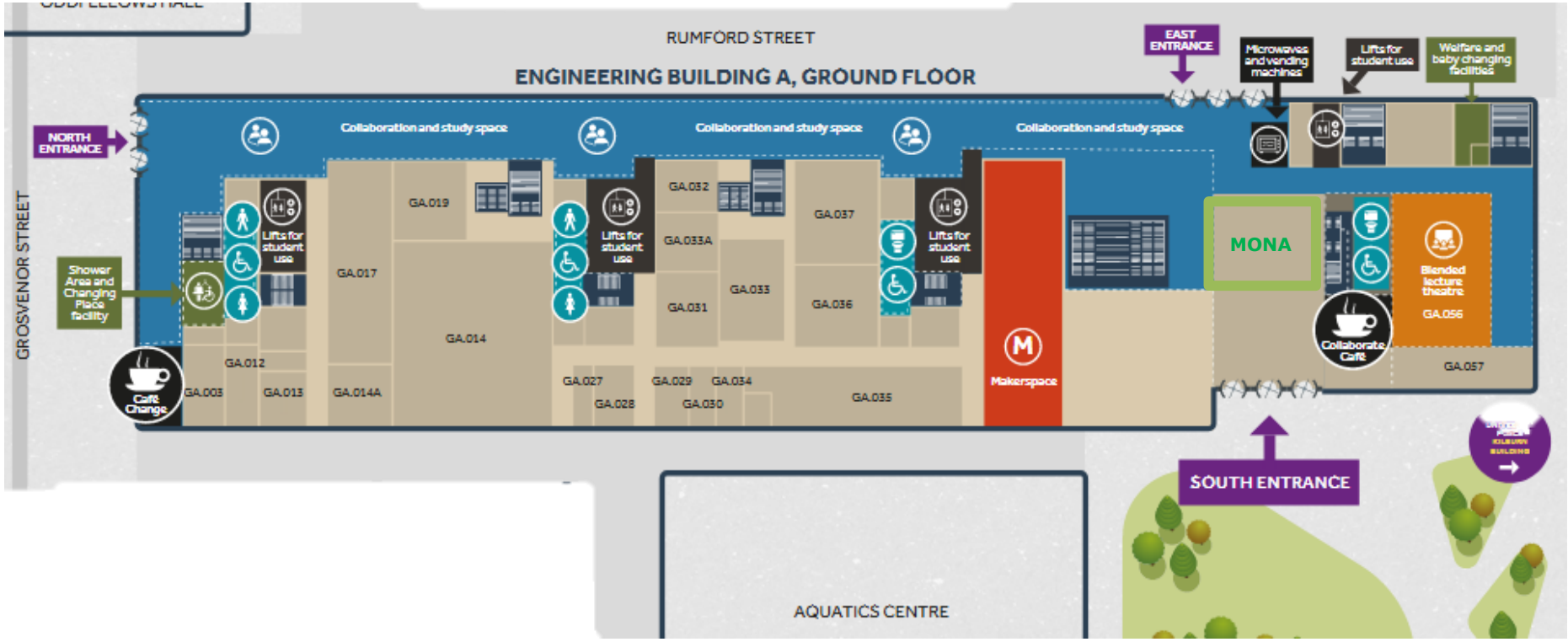
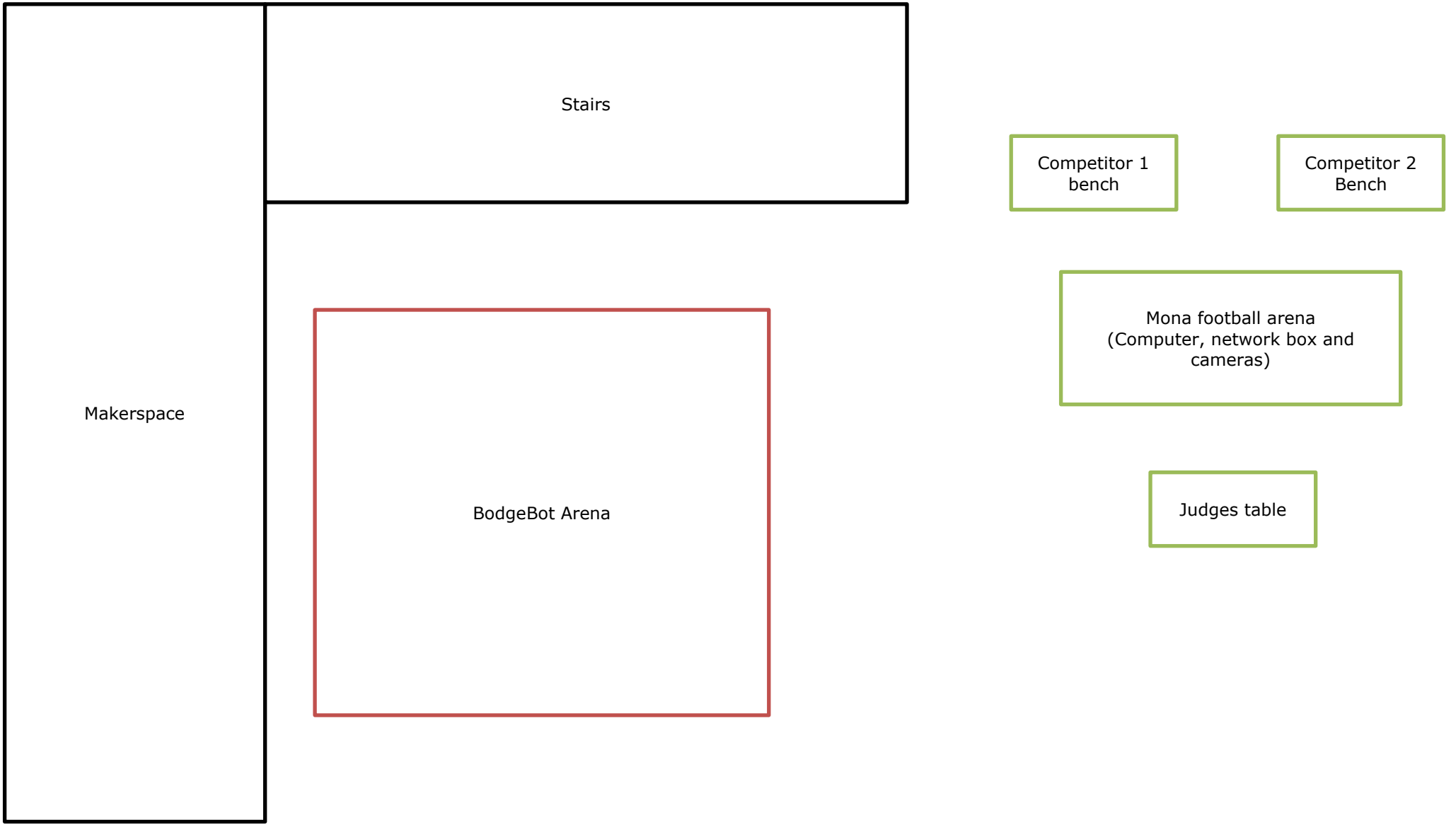
Floor Plan




Stairs
Competitor 1 bench
Competitor 2 Bench
Mona football arena (Computer, network box and cameras)
Makerspace
BodgeBot Arena
Judges table