Asse	ssment Ref. No.					,	Activi	ty Assessed		PRO			
Asse	ssment Date	18/0	18/03/25					Faculty / Directorat					
Asse	ssor	Cha	rles Wa	rhurst		9	Schoo						
Vers	ion No.	1				/	Additi	ional individu	als inv	olve	d in develo	pping the RA	
Signa	Signature of Assessor		Charles Warhurst					Signature of Academic Supervisor / Approver					Tamer Kamel 19/03/2025
Risk S	Score Matrix								Risk S	Score	and Descri	ption	
		Insignificant		Severity					Risk		Risk	Category	Description
				Minor	Moderate	Majo	or	Fatal	Score	e	Level	0 ,	· ·
	Very Unlikely	1 Green		2 Green	3 Green	4 Gree	n	5 Amber	1-	4	Low	Acceptable	No further actions needed
po	Unlikely	Gre		4 Green	6 Amber	8 Ambe	er	10 Red	5 –	9	Medium	Tolerable/Adequat	Should be reviewed to ensure that there is nothing else which could be done
Likelihood	Possible	Gre		6 Amber	9 Amber	12 Red		15 Red	10 –	15	High	Undesirable	Immediately review current control measures, and where appropriate decide on further actions
	Likely	4 Greer		8 Amber	12 Red	16 Red		20 Red	16 - 3	 25	Very High	Unacceptable	Stop activity and make immediate improvements
	Almost Certain	most Certain  Ambe		10 Red	15 Red	20 Red		25 Red				Likelihood (L) x Seve	rity (S) = Risk Score (RS)

What is/are the hazard(s) involved	Who might be harmed	What are you already doing to	<b>Risk Score</b> with current controls in place			What further action is necessary? (Add these actions to the action	<b>Target Risk Score</b> Likelihood x Severity = Risk Score		
with the activity being undertaken?	and how?	control the risk?	L	S	RS	plan below).	L	S	RS
Mains Voltage (230V AC) – Wiring & Handling	The project operator could receive an electric shock if exposed to live mains wiring. Faults may cause overheating or fire, potentially harming others in the workspace.	Insulated tools are used, safe wiring practices are followed, power is always switched off before handling, and fuse protection is implemented.	2 - Unlikely	5 - Fatal	10 - High Risk	Double-check grounding and insulation before live testing. If necessary, use an RCD (Residual Current Device) for added protection.	1 - Very Unlikely	5 - Fatal	5 - Medium Risk

## Risk Assessment Form (RA1)

High DC Currents (Up to 100A on Busbars)	The project operator may suffer burns or electric shock from accidental contact with high-current busbars. Poor connections could lead to overheating or fire.	Fully enclosed busbars, all conductors are appropriately rated and insulated, hands/tools kept away from live circuits.	2 - Unlikely	4 - Major	8 - Medium Risk	Use insulated gloves for handling live connections. Ensure busbar mounting is secure.	1 - Very Unlikely	4 - Major	4 - Low Risk
Soldering Hazards (Burns, Fumes, Eye Injuries)	The project operator may suffer burns from the soldering iron, exposure to fumes may cause respiratory irritation, and solder splashes could cause eye injuries.	A proper soldering stand is used, fume extraction or ventilation is ensured, safety glasses are worn, and hands are washed after handling solder.	4 - Likely	2 - Minor	8 - Medium Risk	Ensure adequate ventilation before prolonged soldering. Consider wearing gloves for high-temperature soldering work.	3 - Possible	2 - Minor	6 - Medium Risk
Short Circuits & Overcurrent Failures	The project operator could be harmed by overheating components or fire caused by excessive current draw due to a short circuit or incorrect wiring.	Proper PCB layout, inline fuses, thermal shutdown for transistors, and controlled current testing before full power operation.	2 - Unlikely	4 - Major	8 - Medium Risk	Always test circuits at low power first. Ensure fuse ratings match expected current draw.	1 - Very Unlikely	4 - Major	8 - Medium Risk
Component Lead Clippings (Eye Injury)	The project operator or others in the workspace may suffer eye injuries from flying lead fragments when cutting components.	Leads are clipped downward or with a hand covering the area to prevent flying debris. Safety glasses are worn when necessary.	4 - Likely	2 - Minor	8 - Medium Risk	Ensure that all lead cuttings are properly disposed of in designated waste containers.	3 - Possible	2 - Minor	6 - Medium Risk
Hot Air Gun / Heat Shrink Gun	The project operator may suffer burns from direct contact with the nozzle or hot air. There is also a risk of	The hot air gun is never left running unattended, kept away from hands and flammable materials, and placed in a safe position when hot.	2 - Unlikely	3 - Moderate	6 - Medium Risk	Store the tool safely when hot. Ensure proper ventilation when using on plastics.	1 - Very Unlikely	3 - Moderate	3 - Low Risk

	fire if the gun is directed at flammable materials.								
Fuses & Overcurrent Protection	The project operator may install an incorrectly rated fuse, leading to inadequate protection or overcurrent faults.	Fuses are correctly rated and installed. Fuse replacements are only performed when necessary and verified for correct ratings.	2 - Unlikely	3 - Moderate	6 - Medium Risk	Double-check fuse ratings before replacement to avoid potential overcurrent damage.	1 - Very Unlikely	3 - Moderate	3 - Low Risk
Sharp Tools (Knives, Scalpels, Cutters)	The project operator may suffer cuts from improper handling of sharp tools or leaving blades exposed in the workspace.	Blades and sharp tools are stored safely and disposed of properly. Used blades are placed in designated disposal containers.	3 - Possible	2 - Minor	6 - Medium Risk	Never leave unguarded blades on the workspace. Ensure a designated area for cutting operations.	2 - Unlikely	2 - Minor	4 - Low Risk
Protective Earth (PE) / Grounding	The project operator may suffer an electric shock if protective earth (grounding) is not properly connected to mainspowered devices.	All Class 1 mains-powered equipment is properly earthed, and protective earth connections are never removed or bypassed.	2 - Unlikely	5 - Fatal	10 - High Risk	Confirm grounding continuity before applying mains voltage.	1 - Very Unlikely	4 - Major	4 - Low Risk

### Risk Assessment Form (RA1)

All staff undertaking risk assessments or checking risk assessments for student projects must be competent and have undertaken the University's Risk Assessment training.

## Refer to scoring matrix on page ¾

### **Action Plan and Monitoring**

This section should be con	npleted by the Risk Assessor and discussed with Manager / Academic Supervisor	This section should be completed by the Manager / Academic Supervisor for monitor and review			
Hazard	Action required	Action assigned to	Target date	Date Completed	
Mains Voltage (230V AC)  – Wiring & Handling	Double-check grounding and insulation before live testing.	Charles Warhurst	30/04/25		
Protective Earth (PE) / Grounding	Double-check grounding and insulation before live testing.	Charles Warhurst	30/04/25		
Short Circuits & Overcurrent Failures	Proper Fuses & Overcurrent Protection	Charles Warhurst	30/04/25		

#### Review

When reviewing this risk assessment remember to move completed actions into the 'what are you already doing.' column, as these actions should be in place by the time you review the risk assessment. You should review your risk assessment if you think it might no longer be valid (e.g. following an incident in the workplace or if there are any significant changes to hazards, such as new work equipment, work activities, personnel etc.)

### **Severity Table**

Severity of injury	Examples	Score
Insignificant	None or very insignificant injuries, health effects, damage or disruption to work. Short-term and/or localised environmental harm.	1
Minor	Cuts bruises, mild skin irritations, mild headaches and pains requiring minor first aid treatment. Minor property damage or disruption to work. Notable contributor to environmental harm.	2

# Likelihood Table

Severity of injury	Examples	Score
Very unlikely	Good control measures are in place. Controls do not rely on a person using them (i.e. personal compliance with safety rules). Controls are very unlikely to break down. People are very rarely in this area or very rarely engage in this activity.	1
Unlikely	Reasonable control measures are in place but they do rely on a person using them (some room for human error). Controls unlikely to breakdown. People are not often in this area / do not often engage in this activity.	2

## University of Plymouth

## Risk Assessment Form (RA1)

Moderate	More serious injuries or ill-health requiring time off work or a hospital visit for example burns sprains, strains, short term musculoskeletal disorders, cut requiring stitches, back injuries, fractures to fingers and toes. Short term absence relating to physical or mental health issues. More serious property damage or disruption. A significant contributor to environmental harm.	3
Major	Broken limbs, amputations, long-term health problems or longer absence. Acute illness requiring medical treatment. Loss of consciousness, serious electric shock, loss of sight. Major property damage, major disruption to work. A major contributor to significant environmental harm.	4
Fatal	Injury or ill-health which leads to death either at the time, soon after the incident, or eventually, as in the case of certain occupational diseases, such as asbestos-related cancers. Catastrophic business losses. The major contributor to significant environmental harm.	5

Possible	Inadequate controls are in place, or likely to breakdown if not maintained. Controls rely on personal compliance. People are sometimes in this area or sometimes engage in this activity and situations sometimes arise from this activity.	3
Likely	Poor controls in place. Heavy reliance on personal compliance (lots of room for human error). People are often in this area / engage in this activity on a regular basis / situation often arise from this activity.	4
Almost certain	No controls in place where there should be, exposure to the hazard is expected to occur in most circumstances. The activity is considered such high risk that it will `certainly lead to injuries.	5