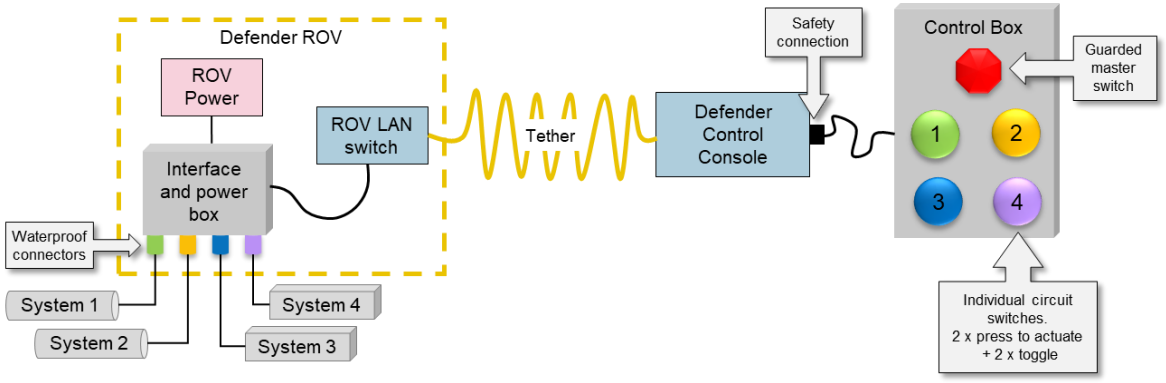
RCloud Tasking Form – Part B: Statement of Requirement (SoR)

Title of Requirement	**ROV Switching Circuit**
Requisition No.	**1000168780**
SoR Version	**0.1**

1.	**Statement of Requirements**
1.1	**Summary and Background Information**
	Dstl is seeking to add a new system / capability to the Videoray Defender Remote Operated Vehicle (ROV) that will allow it to undertake new [Redacted] roles. This system will enable up to four external (i.e. equipment that is not integrated into the ROV operating system) items to be activated (switched on / off) by a remote (from the Defender Control Console) device. Due to the nature of some of the items [Redacted] this remote device will require safety protocols (mechanical, electrical and procedural) to preclude inadvertent initiation. The MIE ROV Project is developing a proof of concept demonstrator that will locate, neutralise and recover unexploded ordnance from the sea bed. In order to reduce the danger to divers, this proof of concept will use ROVs and Remote Controlled Surface Platforms (RCSP) to allow the dangerous operations to be executed remotely. Although the ROV being used (the Videoray Defender) is highly capable it does not have the ability to operate external equipment unless it is integrated into the vehicle operating system (OS). For reasons of safety, some of the external equipment [Redacted] required must be operated independently of the OS. This is particularly so for [Redacted] tools if the system is to achieve Defence Ordnance Safety Group (DOSG) approval for service use.
1.2	**Requirement**
	The requirement is to control (activate / switch on/off) up to four items of equipment that will be attached externally to the Defender vehicle. These items could include: • A laser. • A camera (e.g. IR) • A light (e.g. IR/UV) • A sensor (e.g. magnetometer) • An acoustic beacon / modem • An electrically controlled hook • [Redacted] • [Redacted] The majority of these items will require a single-pole toggle switch in order that they can remain in the selected (on/off) state. The [Redacted] switches will be single-pole push-button switches.

These will need to have mechanical guards to preclude inadvertent operation. The remote device (control box) that contains the switches will also require a master on/off switch.

A high-level schematic of the requirement is shown in the diagram below:



The Key User Requirements are as follows:

- The system must use the existing ROV tether.
- The system must be independent of the ROV Operating System but can use the Ethernet network (like the Coda Octopus C500 3D sonar).
- The control box must be able to be plugged into either of the Defender Control Consoles (PC and tablet) using Ethernet, USB or serial connections.
- As another level of safety, the system must only be able operate when the control box is plugged into the Defender Control Consoles. When it is not, the external items of equipment on the Defender must be isolated from any power sources.
- The single-pole toggle switches will activate items attached to the Defender that require 12v or 24v DC. The guarded, single-pole push-button switches will active items requiring as high a voltage as possible (400v?) but will also work at 24v/48v if that is all that is available.
- The design of the system must demonstrate that it conforms to DOSG safety requirements (largely covered above). Dstl will provide these standards and work with the contractor on the design as required.
- The interface and power box on the Defender must work at a depth of at least 1000m
- The control box should be as waterproof (IP67) as the tablet ROV Control Console and robust enough to survive rough service use by Royal Navy EOD teams.

The following requirements are desirable:

	• Whilst the system must be independent of the ROV Operating System it would be useful if the ROV operator could see the status of the Control box via an indicator (e.g. Green light is box not attached, Amber light is box attached and Red light is box 'armed' (powered up). • The interface and power box on the Defender should work at a depth of at least 2000m **The ultimate requirement is safety of personnel when the Defender is armed with** [Redacted] **therefore the mechanical, electrical and procedural safety protocols detailed above must be absolute.** Dstl is looking for an innovative, elegant, simple and reliable solution that is robust enough to be brought into service with the Royal Navy. All of the above requirements, apart from the safety, are open for discussion at this stage.
1.3	**Options or follow on work**
	Not Applicable
1.4	**Contract Management Activities**
1.5	**Health & Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement**
	The solution must use existing safety protocols that are approved by the Defence Ordnance Safety Group. There is no GFE that defines this clearly. A Dstl subject matter expert will work with the contractor to ensure they are implemented in the design.

1.6	Deliverables & Intellectual Property Rights (IPR)					
Ref.	**Title**	**Due by**	**Format**	**Expected classification (subject to change)**	**What information is required in the deliverable**	**IPR Condition**
D -1	Proposed System Design Document pack	31st March 2022	MS Word	[Redacted]	The document pack to include: • Description of the system (how it works) • Installation instructions. • Description of how it will used by the operator and how external systems are attached to it. • A description of how it meets DOSG safety requirements. • Wiring diagram. • Engineering drawings.	Default RCloud Agreement Terms and Conditions shall apply
D - 2	Prototype system	30th Jun 2022	Hardware and MS Word	[Redacted]	• A working system ready for installation on the ROV and trials by Dstl / operators. • User instructions.	Default RCloud Agreement Terms and Conditions shall apply

1.7	**Deliverable Acceptance Criteria**
	As per RCloud Terms and Conditions The System Design Document Pack (D-1) must contain all items detailed. These will be scrutinised by Dstl subject matter experts (SME) to ensure they include information of the required detail to understand the system design and functioning. The Prototype System (D-2) must be fully functional to allow trials with equipment as detailed in the requirement (Section 1.4). It will be subject to scrutiny by Dstl SMEs and Operators to provide feedback to the contractor on any required design changes.

2	**Evaluation Criteria**
2.1	Method Explanation
	The proposal must demonstrate sufficient understanding of the requirement in order to provide confidence that the outputs are achievable. The proposal must be affordable.
2.2	Technical Evaluation Criteria
	Non-Competitive – the contractor's proposal must demonstrate how they are going to meet the requirements e.g. provision of a work break down structure, allocation of resources etc.
2.3	Commercial Evaluation Criteria
	Please submit your full firm price breakdown for all costs to be incurred to fulfil this requirement, including: • What rates are being used for what role • Quantity of manpower hours per role • Any Materials costs • Any Facility costs • Any sub-contractor costs • Any travel and subsistence costs Any other costs. Please note the MOD operates a policy of No Acceptable Price No Contract (NAPNOC). The placing of any contract will depend upon consideration of the proposal received and the Authority reserves the right, at its sole discretion, not to proceed to contract for any part or all of a contractors proposal. And if necessary, not to place any contract as a result.