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

Title of Requirement	Tunable Laser for next generation optical communications
Requisition No.	**1000162139**
SoR Version	**1**

1.	**Statement of Requirements**
1.1	**Summary and Background Information**
	A tunable or similar laser system is required by Dstl for advanced communication. A two phase project is proposed consisting of a preliminary laboratory study and prototype laser system built in phase 1, followed by a compacted demonstration prototype in phase 2. There is an ongoing project to address the need for better communications using optical methods. Current laser technology at a high technology readiness level (TRL) and available now makes use of single wavelengths. The communication could be improved further by using a more advanced laser system that will enable a wider variety of wavelengths to be used. This will give the user a choice of wavelength which may be more appropriate to certain scenarios.
1.2	**Requirement**
	This is a research and development project that Dstl propose has two phases: • a preliminary laboratory study to investigate and build the proposed concept, explore trade-offs, and inform Dstl's decision whether or not to proceed to (***break point***): • a secondary phase to design and build a compact self-contained demonstrator system suitable for incorporation in future trials. Dstl require a laser source that is capable of outputting narrow linewidth outputs at tunable or selectable wavelengths. The following parameters of the laser are essential: • The output of the laser should be pulsed • The pulse width should be shorter than 100 ns • The energy per pulse should be tens of mJ • The wavelength(s) should be within the range of 480 nm – 560 nm • A choice of at least 3 well separated output wavelengths within the band, selected using different operating conditions or different optics • The linewidth of each wavelength should be no wider than 0.1 nm • The repetition rate of the system should be at least 20 Hz • The system as a whole should be simple and robust, and suitable to be made into a compact demonstrator

	The following element is desirable: • A tunable laser with a tuning range of at least 10 nm (within the band specified above) • The laser will have the ability to operate at the wavelength of at least one strong Fraunhofer line within the range 480 nm – 560 nm In addition to these requirements, Dstl will provide a scientist to work in collaboration with the supplier for up to 6 days per month for the duration of the project.
1.3	**Options or follow on work** *(if none, write 'Not applicable')*
	Phase 1 will provide details in the final report deliverable of suggestions for further improvements to the system, and how it can be made into an acceptably low size and weight. It will recommend whether or not the concept should be taken forward to phase 2 based on the parameters of the laser system already produced and the components used. An additional deliverable will be provided during phase 1 outlining the design concept for the phase 2 system, that will be discussed at a review meeting and help to inform the decision on whether to proceed with phase 2. **It has been assumed that phase 1 will last up to 9 months, and phase 2 an additional 18 months.**
1.4	**Contract Management Activities**
	Quality Control and Quality Assurance processes and standards that must be met by the contractor ☒ ISO9001 (Quality Management Systems)
1.5	**Health & Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement**
	The final phase 2 deliverable should adhere to BS EN 60825-1:2014, "Safety of laser products. Equipment classification and requirements."

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**
P1 – Output	Progress reviews	Every 6 weeks	Powerpoint presentation	O	Presentation pack to include but not limited to: • Update on technical progress • Progress report against project schedule • Review of risk management plan • Commercial aspects • Review of deliverables Risks/issues	R Cloud 705
P1 – D1	Phase 1 interim report	T0 + 6months	Written report	O	• Technical progress to date • Issues or risks foreseen with the rest of the project	R Cloud 705

P1-D2	Phase 2 design proposal	T0 + 10 months	Powerpoint presentation delivered at a face to face review meeting with key Dstl staff	O	• An initial design proposal to Dstl with options of how the system will be made compact and robust This deliverable will inform Dstl's decision as to whether to proceed with phase 2	RCloud 705
P1 – D3	Phase 1 final report	T0 + 12 months	Written report	O	• Concept and background • Experimental details including underlying physics • Technical parameters of the laser • Performance trade offs • Simple user guide • Recommendations for phase 2 including principal features, parameters of the laser, anticipated performance and limitations of a demonstrator	RCloud 705
P2 – Output	Quarterly progress reviews	Every 3 months	Powerpoint presentation	O	Presentation pack to include but not limited to: • Update on technical progress	RCloud 705

					• Progress report against project schedule • Review of risk management plan • Commercial aspects • Review of deliverables • Risks/issues	
P2 – D1	Phase 2 interim report	T0 + 21 months	Written report	O	• Technical progress to date • Issues or risks foreseen with the rest of the project	RCloud 705
P2 – D2	Phase 2 final report	T0 + 30 months	Written report	O	• Technical parameters of the laser • Simple user guide	RCloud 705
P2 – D3	Phase 2 laser delivery	T0 + 30 months	Laser system	O	• Delivery of the final prototype to Dstl	RCloud 705

1.7	**Deliverable Acceptance Criteria**

All Reports included as Deliverables under the Contract e.g. Progress and/or Final Reports etc. must comply with the which defines the requirements for the presentation, format and production of scientific and technical reports prepared for MoD.

Interim or Progress Reports: The report should detail, document, and summarise the results of work done during the period covered and shall be in sufficient detail to comprehensively explain the results achieved; substantive performance; a description of current substantive performance and any problems encountered and/or which may exist along with proposed corrective action. An explanation of any difference between planned progress and actual progress, why the differences have occurred, and if behind planned progress what corrective steps are planned.

Final Reports: shall describe the entire work performed under the Contract in sufficient detail to explain comprehensively the work undertaken and results achieved including all relevant technical details of any hardware, software, process or system developed there under. The technical detail shall be sufficient to permit independent reproduction of any such process or system.

All Reports shall be free from spelling and grammatical errors and shall be set out in accordance with the Statement Of Requirement (1) above.

Failure to comply with the above may result in the Authority rejecting the deliverables and requesting re-work before final acceptance, in accordance with DEFCON 524 Rejection.

Standard Framework T&C's conditions apply – please note, inclusion of DEFCON 800 series.

Open Book Accounting.

- Outputs are in the form of presentations.
    - They are not expected to be formally reviewed before release.
- Deliverables are generally longer technical reports that form a lasting record of the work and will be circulated amongst stakeholders to inform decision points and future direction.
    - They shall be subjected to rigorous technical and editorial review by The Contractor before formal issue to Dstl.
    - Dstl may be able to provide feedback on interim drafts, if requested.
    - Where a presentation is requested in conjunction with a document, the presentation component shall be a summary of the work, without the need to cover all details. Ordinarily, such presentations shall be delivered at the nearest subsequent QPR.
    - All deliverables will be reviewed by Dstl within 30 days of receipt, after which an acceptance/rejection decision will be communicated. For a deliverable to be accepted it must address all of the specific requirements listed, together with the following general requirements:
        - The content shall cover the required scope.
        - The content shall be covered in sufficient depth to be convincing.

	▪ The content shall be technically consistent and accurate. ▪ The content shall be clear and readable by non-specialists, with necessary supporting detail in Appendices. ▪ The conclusions and recommendations shall be realistic and supported by the analysis. o Rejected deliverables shall have a new 30 day period for review by Dstl after receipt of the amended deliverable. o Document outputs/deliverables shall be provided in native format (Microsoft Office 2010 or earlier) as well as PDF. o Document outputs/deliverables shall comply with the Defence Research Reports Specification (DRRS) http://www.dstl.gov.uk/athenareportsubmission The Contractor shall use appropriate means to transmit electronic outputs/deliverables to Dstl with due consideration of classification, with e-mail as the preferred option.

2	**Evaluation Criteria**
2.1	Method Explanation
	Two versions of your tender response must be submitted as follows: • A technical response containing your technical proposal only, with any pricing information redacted. • A full Commercial response including both technical and pricing information. Tenders will be evaluated on Technical and Price using a lowest price per technical point scored. This will be ascertained by dividing each bidder's quoted price by their final moderated technical score. The supplier with a fully commercially compliant proposal, with the lowest price per technical point will be the winning tenderer. In the event of a tie between tenders having achieved exactly the same price per technical point, precedence shall be given to the tender that has achieved the highest overall technically weighted score. In pricing your proposal, please be aware that DSTL's undisclosed budget limit for this task, including the Phase 2 Option, is a figure between £326,000 and £434,000. DSTL reserves the right to fail a tender exceeding the unrevealed limit on grounds of unaffordability. A range has been provided to give you (the supplier) an indication on the expected level of effort required – the

undisclosed limit lies within this to ensure the Authority is not bound to accept purposely inflated tenders and receives Best Value for Money (BVFM) for the UK taxpayer.

2.2 Technical Evaluation Criteria

Technical Evaluation Criteria:

The Technical evaluation will be carried out by a team of 4 assessors who will review the proposals independently. Their scores will then be brought to a moderation meeting with the Dstl Project Manager to discuss each Tenderers response and allocate a moderated technical score to each of the technical criteria and calculate a final score.

The overall maximum weighted score available is: 80.

The Technical criteria and scoring metric used to score the proposals are provided below. The Authority reserves the right to reject any tenders that fail to achieve a minimum score of **4** for any of the criteria before weighting is applied.

Criteria	Available Score	Weighting	Total Availabl Score
T1: Technical approach The bidding organisation shall provide a detailed technical proposal including the approach to each Work Package for the Task(s) being addressed, demonstrating their technical understanding. This shall include the Phase 2 Option package.	0-10	3	30
T2: Personnel and resources The bidding organisation shall demonstrate that they have Suitably Qualified and Experienced Personnel (SQEP) and adequate physical resources (e.g. laboratories and test equipment), covering all aspects of the Task(s) being addressed. SQEP shall be demonstrated in the form of CVs and a list of named individuals against each Subtask.	0-10	2	20
T3: Track Record The bidding organisation shall provide evidence of their prior work in technical areas relevant to the requirements of the Task(s) being	0-10	2	20

addressed. This shall include details of recent collaborative work in the field of underwater optical communications.				
T4: Programme structure & delivery The bidding organisation shall provide a detailed work breakdown structure and project schedule together with a clear definition of the expected outcomes, the key performance indicators and the outputs that will be delivered. This shall include evidence that the organisation has appropriate technical assurance controls in place to ensure the timely and successful delivery of the work, including software quality assurance where appropriate. This shall also include evidence that the organisation has identified the key technical and project risks and mitigations.	0-10	1	10	

Weighting
3 – Critical
2 - Important
1 - Routine

Technical Scoring Metric:

Mark	Criteria
0 – Unacceptable or no answer	Failed to answer the question in its entirety. Has demonstrated inadequate experience or provided inadequate supporting evidence which gives no confidence of the Tenderer's competence and an unacceptably high level of risk to the project
1 – Poor response with Very High risk	Has demonstrated narrow experience or provided minimal supporting evidence which gives low confidence of the Tenderer's competence and a very high level of risk to the project.
4 – Satisfactory with Medium to High risk	Has demonstrated some experience and provided adequate supporting evidence which gives some confidence of the Tenderer's competence and a medium to high level of risk to the project.
7 – Good with Low to Medium risk	Has demonstrated broad experience and provided adequate supporting evidence which gives

	confidence of the Tenderer's competence and a low to medium level of risk to the project.
10 – Excellent with Very Low risk	Has demonstrated considerable and detailed experience and provided sound and relevant supporting evidence which gives high confidence of the Tenderer's competence and a low level of risk to the project.

2.3 Commercial Evaluation Criteria

Commercial Criteria

The following Commercial Criteria will be marked on a Pass/Fail basis:

Element	Requirement	Weighting
C1	Compliance with the Task specific terms and conditions as stated within the Statement of Requirement and respective Call-Off Tasking Form.	Pass/Fail
C2	Please submit your full firm price breakdown for all costs to be incurred, including: • What rates are being used for what Grade • Quantity of manpower hours per Grade • Travel & Subsistence costs • Journal publication fees • Any Materials costs • Any Facility costs • Any Sub-Contractor costs • Any other costs	Pass/Fail

Mark	Definition
Pass	Fully meets the Authority's requirement. Provision and acceptance of the sub-criteria information in the format requested, which is clear, unambiguous and transparent.
Fail	Unacceptable/Nil Return. Tenderer did not respond to the question or the response wholly failed to demonstrate an ability to meet the sub-criteria requirement. **Any proposal marked as a Fail will be excluded from the competition.**

Compliance to R-Cloud v4 terms and conditions and agreed rates.