# Serapis Tasking Form

## Tasking Form Part 1: *(to be completed by the Authority's Project Manager)*

| | | | |
|---|---|---|---|
| **To:** | Lot 1 Roke Manor Research Ltd | **From:** | The Authority |

Any Task placed as a result of your quotation will be subject to the Terms and Conditions of Framework Agreement Number: LOT 1 DSTL/AGR/SERAPIS/COL/01

**VERSION CONTROL**

Version 01-000
Version 01-001 Updates and clarifications from The Authority
Version 01-002 Further updates and clarifications from The Authority
Version 01-003 JNP accepted changes and suggested some additional wording.
Version 01-004 The Authority edit.
Version 01-005 JNP updates to match requirements spreadsheet
Version 01-006 JNP updates after Workshop
Version 02-000 Final version

**REQUIREMENT**

| | | | |
|---|---|---|---|
| **Proposal Required by:** | [07/06/2022] | **Task ID Number:** | [C56] |
| **The Authority Project Manager:** | **[REDACTED]** | **The Authority Technical Point of Contact:** | **[REDACTED]** |
| **Task Title:** | [Design, Build, Demonstrate and Deliver a Modern GNSS Threat Simulator System] | | |
| **Required Start Date:** | [**07/07/2022**] | **Required End Date:** | **[05/02/2023]** |
| | | **Primary Demonstration Window:** | **[15/01/2023 – 26/01/2023]** |
| **Requisition No:** | **[REDACTED]** | **Budget Range** | [£4,087,944.51] |

**TASK DESCRIPTION AND SPECIFICATION**

| | |
|---|---|
| **Serapis Framework Lot** | ☒ Lot 1: Collect<br>☐ Lot 2: Space systems<br>☐ Lot 3: Decide<br>☐ Lot 4: Assured information infrastructure<br>☐ Lot 5: Synthetic environment and simulation<br>☐ Lot 6: Understand |

### Statement of Requirements (SOR)

Dstl's requirement is set out below.

#### 1. General

Dstl wish to place a contract to replace their GNSS Threat Emulation capability with a new, enhanced version. The successful bidder will take Dstl's requirements and design, build, test, demonstrate and deliver a unique GNSS Threat Emulation capability for use in multiple test environments. This enhanced capability's expected service life is in the region of ten years so the design should reflect that. The capability should be sufficiently resilient, maintainable and upgradeable that Dstl can be confident such a service life is possible.

Delivery of a capability that is both functional and meets the requirements is critical. This is something that will only be evident on completion of the final demonstration. Dstl expect this criticality to be reflected in both the approach taken and schedule of

payments. On completion of the demonstration Dstl shall be sole judge of whether requirements have been met and whether delivery has been a success.

Dstl are willing to discuss the refinement of requirements, use cases and acceptance criteria, prior to commencement and in extremis, during development. All such change requests must be submitted in writing before Dstl can accept or reject them. Any acceptance or rejection by Dstl will be documented, signed and witnessed.

The equipment shall be laboratory grade and will be used by suitably qualified & experienced personnel, trained in its operation.

## 2. Technical

The threat emulation system will **[REDACTED]** and a **[REDACTED]** to operate in all test environments, with additional amplification, weatherproofing enclosures, antennas and feeder cables as dictated by the environment and use case.

To keep the **[REDACTED]**, it is anticipated but not mandated that the core capability (SSM) be based around computer controlled Software Defined Radio (SDR) systems, with supporting pre-amplifiers and attenuation systems as needed to meet the requirements.

### 2.1 [REDACTED]

The system is defined by the following use cases:

**1) Lab test**

a. **[REDACTED]**.
b. RF Output: Each BSSM capable of simultaneously generating up to **[REDACTED]** per signal band.
c. Environment: Laboratory bench.
d. Control: **[REDACTED]**.
e. Power supply: 240V AC Mains supply.

**2) Anechoic [REDACTED]**

a. **[REDACTED]**.
b. Environment: Anechoic chamber laboratory environment.
c. Control: All HPSSMs operating under the simultaneous control of a single CSM interface/GUI.
d. Power supply: **[REDACTED]**.

**3) Low power open environment field trial**

a. Number: **[REDACTED]**.
b. RF Output: Each threat emulation system capable of simultaneously radiating >= **[REDACTED]** per signal band from omni directional and/or RHCP directional antenna fed by 20m long flexible coaxial feed cable
c. Environment: **[REDACTED]**.
d. Control: All LPSSMs operating under the simultaneous control of a single CSM interface/GUI, either directly connected or connected by a supplier-sourced control link, over a maximum range of 10km, operated from a covered location (i.e. a tent, unheated building or vehicle). Positive feedback of remote control operations essential.
e. Power supply: **[REDACTED]**.

**4) Medium power open environment field trial**

a. Number: **[REDACTED]**.
b. RF Output: Each MPSSM radiating >= **[REDACTED]**per signal band when simultaneously generating a maximum of 2 bands at any one time, or >= **[REDACTED]** per signal band when simultaneously generating all bands at one time, using a RHCP directional antenna fed by a coaxial feed cable 20m long.
c. Environment: MPSSMs and CSM operating in a covered (i.e. tent, unheated/uncooled building or Transit type van) field trials environments covering all likely UK climatic conditions (-10°C to +30°C). Coaxial cables and antenna

systems capable of operating in exposed open field trials environments covering at least the UK climatic conditions and ideally wider temperatures to support 5-Eyes deployment.

d. Control: **[REDACTED]**.

e. Power Supply: **[REDACTED]**.

### 2.2 System Module Numbers

1. **[REDACTED]**:
    a. An installed anechoic chamber (permanent installation of 15 HPSSM + 1 CSM) plus:
        i. one Lab test (4 BSSM + 1CSM) and two Low power open environment field trials (20 LPSSMs + 2 CSMs), or
        ii. **[REDACTED]**)
2. Each SSM shall be capable of storing a library of digitised RF files, in an open and fully defined file format to be agreed with Dstl.
3. Each SSM will have at least 1TB of storage.
4. Each SSM shall be able to replay a range of digitised RF signals. This will include those in the open and fully defined file format agreed with Dstl as well as the TEXBAT scenario files.
5. **[REDACTED]**.
6. Each SSM will have an RF output that combines the signals from all bands.
7. Each SSM shall allow the user to select (through the CSM interface/GUI) one-shot file replay or repeating file replay. Repeating replay shall not cause any cessation of signal output, no matter how brief, at the point that the file is repeated.
8. The power output in each band of each SSM shall be individually controllable (through the CSM interface/GUI) at any time with a controllable dynamic range of **[REDACTED]** at the RF output.
9. Changes in power level shall not cause any cessation of signal output, no matter how brief, at the point that the change occurs.
10. Each SSM shall allow the user to select (through the CSM interface/GUI) the RF file and centre frequency (to a frequency resolution of **[REDACTED]**or better) to be played in each band.
11. Multiple SSMs shall be simultaneously controllable and sub-second time synchroniseable, from a single CSM via a interface/GUI.
12. **[REDACTED]**.
13. Each SSM, and each CSM enclosure shall be capable of being fitted into a secondary enclosure, either singly or in multiples, to provide the necessary protection for all use-case environments.
14. A minimum set of secondary SSM enclosures, that provide the necessary protection for all use-case environments, shall be specified as part of the design and provided as part of the delivery.
15. Each SSM shall operate using a single internal frequency reference good enough to maintain a frequency accuracy and precision at the RF output of better than **[REDACTED]** in each band, in all defined operating conditions.
16. Each SSM shall be capable of accepting and locking to an external **[REDACTED]** frequency reference.
17. **[REDACTED]**
18. Each SSM via the CSM, must allow the user to enter power offset values in each band, to account for external losses or gains, such as from cable losses or external amplifier gains. These offset values must be able to be stored, retrieved from memory and applied both manually and automatically with ease every time the system is powered up.
19. It is critical that internal non-volatile storage of SSMs and CSMs can easily be removed, or thoroughly purged (commercial grade), to allow the modules to be transported and stored as not protectively marked items.
20. The user shall be able to upoad and download waveforms, calibration values and offset values onto SSM and CSM from a separate laptop via a cable link, wifi or standard plug-in media as required.
21. The details of the hardware design including interfaces will be documented as part of the deliverable.

### 2.3 Amplifiers

22. **[REDACTED]**.
23. Amplifiers shall be built into an enclosure suitable for operation in a controlled laboratory or enclosed vehicle environment.
24. Amplifiers shall be capable of being fitted into a secondary enclosure, either singly or in multiples, to provide the necessary protection for all use-case environments.

### 2.4 Antennas [REDACTED]

25. A supply of 40 (35+spares) RHCP directional antennas shall be provided.
26. A supply of 23 (20+spares) omnidirectional antennas shall be provided.

27. **[REDACTED]**.
28. 45 (35+spares) 20m flexible low-loss coaxial cables shall be provided.

### 2.5 Control software

29. The SSM control software shall be able to be store and retrieve settings for that module.
30. **[REDACTED]**.
31. When an SSM is assigned to a CSM, the CSMs stored settings will override the SSM settings.
32. The CSM software shall control all SSMs assigned to them as follows, either individualy or in user assigned groups.
33. The CSM GUI shall allow the user to select in real time one-shot file replay or repeating file replay.
34. The power output in each band of each SSM shall be individually controllable (through the CSM interface/GUI) at any time within a dynamic range of **[REDACTED]**.
35. The CSM GUI shall allow the user to select the I/Q RF file and centre frequency (to a frequency resolution of at least **[REDACTED]**) to be played in each band individually.
36. The CSM GUI shall allow the user to enter calibration values for frequency and power in each band individually.
37. The CSM GUI shall allow the user to enter displayed-power offset values in each band to account for external losses or gains such as from cable losses or external amplifier gains.
38. **[REDACTED]**.
39. The CSM GUI shall allow the user to select ramp up, ramp down or ramp up then down with or without a maximum power hold period.
40. The CSM GUI shall allow the user to trigger the start of a power ramp either manually (via the GUI) or via a hardware input trigger pulse on the SSM.
41. The CSM GUI shall provide scripted control of each SSM including file selection, file replay start/stop, file replay power level and any automated ramps; with the script file including timed operation of any of the above relative to script start time.
42. The CSM GUI shall allow the user to trigger the start of a script either manually (via a GUI) or via a hardware input trigger pulse on the SSM.
43. The CSM GUI shall be able to turn off all signal generation on all assigned SSMs (either locally or remote controlled) in an emergency with a maximum of two GUI button pushes (envisaged to be a large STOP button and a subsequent a confirmation YES/NO dialogue).
44. The CSM GUI must provide clear visual positive confirmation of the implementation of the STOP command from every connected SSM.
45. The STOP button must be visible and usable at all times and must override any script or activity in progress.
46. The CSM GUI shall provide a clear display of the current status of all assigned SSMs, including positive feedback of the implementation of commands sent to each SSM either manually or under script control.
47. **[REDACTED]**++.
48. SSM and CSM software internally documented source code, compilers, software documentation, basic user guides and any appropriate licences shall be part of the system delivery; Dstl wishes to be able to modify and maintain the software and to adapt it to future and specialised trials needs themselves if necessary. Any modifications from the delivered software, made by Dstl will be at Dstl's own risk.
49. Full details of all remote control messages, software interfaces and protocols will be documented and delivered.
50. The CSM control software will maintain a time and date stamped log of all user or scripted actions.

### 2.6 General

51. **[REDACTED]**.
52. Components of the system shall be rugged; They will be transported, by air, by sea, and in ground vehicles over poorly maintained gravel/mud tracks. They will be lugged around fields, into and out of vans and sometimes into boats. They risk being knocked or dropped in transit. They risk being exposed to the elements while being transported, set up, torn down or in operation. **[REDACTED]**.
53. Components shall be reliable and come with short turn around, extendable at minimal cost maintenance contracts; anticipated sytem life is ten years.
54. During low power field trials, the system shall sometimes be operated from moving vehicles, land sea and air.
55. **[REDACTED]**).
56. A compact design is highly desireable, transport, lab and storage space is at a premium.
57. Hands on training shall be provided for two Dstl staff as part of the system demonstrations, the training will be documented (including scripts) and it's effectiveness will be assessed by the Dstl staff. The training documentation will be part of the deliverable as will any training data.

58. The system will be delivered with a user manual.
59. No system element is be more than a 2-person lift (<33kg).
60. The design must consider all safety aspects but does not need to be certified to any formal standards. (UKCA/CE etc)
61. The equipment shall be warrantied for a minimum of 12 months.
62. **[REDACTED]**.)
63. **[REDACTED]**.

**Procurement Strategy**

☒ Lot Lead to recommend ☐Single Source / Direct Award

**Pricing:**

☒ Firm Pricing ☐ Ascertained Costs* ☐ Other*

Firm Pricing shall be in accordance with DEFCON 127 and DEFCON 643

Ascertained Costs shall be in accordance with DEFCON 653 or DEFCON 802.

*only at Authority's discretion

**Task IP Conditions**

| **Task IP Conditions** (Follow the **[REDACTED]** guide to identify your information and IP requirements for each deliverable) | **Summary of the Authority's rights in foreground IP (IP generated by the supplier in performance of the contract)** |
|---|---|
| **[REDACTED]** | Vests ownership with the Authority |
| **[REDACTED]** | Enables MOD to share in confidence as GFI or IRC under certain types of agreements.<br>Can be shared in confidence within UK Government. |
| OTHER IP DEFCONS: 14* ☐, 15* ☐, 16* ☐, 90* ☐, 91* ☐, 126* ☐ | Generally only suitable for deliverables at TRL 6 and above. |
| BESPOKE IP Clause ☐ * | Details to be added and agreed by IP Group |
| * Do not use without IPG advice and approval | |
| *Please state in this text box if MOD or the customer has a requirement a) that one or more Other Government Departments is able to share confidentially with their own suppliers, b) to publish but you do not think there is a requirement to own or control the deliverable, or c) to share under a procurement* Memorandum of Understanding (MOU).*<br><br>*If any of these three issues applies, please contact IPG for advice before completing this form. *Listing research MOUs is not required, but can be a helpful courtesy to the supplier.* | |

**DELIVERABLES**

| Ref | Title | Due by | Format | TRL | Expected classification (subject to change) | Information required in deliverable | IPR DEFCON |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Design Review | | | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | Demonstration 1 | | | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | Demonstration 2 | | | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | Demonstration 3 | | | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | Training | | | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | System Delivery | | Hardware, Software, MS Word | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |

**DELIVERABLE: ACCEPTANCE / REJECTION CRITERIA**

Unless otherwise stated below, Standard Deliverable Acceptance / Rejection applies. This is 30 business days, in accordance with DEFCON 524 Rejection, and DEFCON 525 Acceptance.

**Standard Deliverable Acceptance / Rejection:-**

Yes ☒ (DEFCON 524 Rejection, and DEFCON 525 Acceptance)

No ☐ (if no, please state details of applicable criteria below)

**Deliverable Acceptance / Rejection Criteria:-**

*Acceptance will tied to a successful demonstration using Dstl agreed tests and test data.*

**Government Furnished Assets (GFA)**

**ISSUE OF EQUIPMENT/RESOURCES/INFORMATION/FACILITIES**

**None.**

**QUALITY STANDARDS**

☒ **ISO9001** (Quality Management Systems)

☐ **ISO14001** (Environment Management Systems)

☒ **ISO12207** (Systems and software engineering — software life cycle)

☒ **TickITPlus** (Integrated approach to software and IT development)

☐ **Other:** (Please specify in free text below)

**TASK CYBER RISK ASSESSMENT**. *(In accordance with* **[REDACTED]** *and the* **[REDACTED]**)

| | |
|---|---|
| Cyber Risk Level | **[REDACTED]** |
| Risk Assessment Reference | **[REDACTED]** |

| ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO THIS CONTRACT |
| --- |
| |

**Please ensure all completed forms are copied to [REDACTED] when sending to the Lot Lead.**

# Tasking Form Part 2: *(To be completed by the Lot Lead)*

| To: The Authority | From: The Lot Lead |
|---|---|

**Proposal Reference** **[REDACTED]** **(attached)**

**Delivery of the requirement:**

**The proposal <u>shall</u> include, but not be limited to:**

- A full technical proposal that meets the individual activities that are detailed in Statement of Requirements (Part 1 to Tasking Form).
- Breakdown of individual Deliverables, with corresponding Intellectual Property rights applied.
- Breakdown of Interim Milestone Payments, with corresponding due dates.
- A work breakdown structure/project plan with key dates and deliverables identified.
- A list of required Government Furnished Assets from the Authority, including required delivery dates.
- A clear identification of Dependencies, Assumptions, Risks and Exclusions which underpin your Technical Proposal.
- Sub-Contractors Personnel Particulars Research Worker Form and security clearances (if applicable)

**PRICE BREAKDOWN**

*You are to use the costs detailed in Item 2 Table I in the Schedule of Requirement and at Annex E Table 2 of the Serapis Framework Agreement. Please also provide a price breakdown which should include, but is not limited to: Lot Lead Rates, Sub-contractors costs and rates, travel and subsistence. In support of your Proposal you are requested to provide clear details of all Dependencies, Assumptions, Risks and Exclusions that underpin your price*.

**Offer of Contract:** *(to be completed and signed by the Contractor's Commercial or Contract Manager)*

| | | | |
|---|---|---|---|
| **Total Proposal Price in £** | £4,087,944.51 | | (ex VAT) |
| **Start Date:** | 10/10/2022 | End Date: | 31/12/2024 |

| | | |
|---|---|---|
| **Lot Leads Representative** | Name | **[REDACTED]** |
| | Tel | **[REDACTED]** |
| | Email | **[REDACTED]** |
| | Date | 04/10/2022 |
| **Position in Company** | **[REDACTED]** | |
| **Signature** | **[REDACTED]** | |

## Core Work – Breakdown

| Lot Lead Rates for Task Management Services (TMS)<br>*Please insert/delete rows as necessary* | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Team Member Name** | **Role** | **Activity Type** | **Rate (£)** | **Total Hours** | **LMS recovery per role per hour** ('d' element) | **Total LMS recovery due (£)** ('d' x total hours) | Total TMS Cost (£) (Rate x total hours) |
| **[REDACTED]** | Analyst | SOR Development | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Senior Principal Engineer | SOR Development | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Analyst | Contracting / Competition | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Commercial Manager | Contracting / Competition | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Analyst | Contracting / Competition | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Analyst | Assurance | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Assistant Project Manager | Assurance | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Assistant Project Manager | Assurance | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Principal Engineer | Assurance | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Analyst | Research Management | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Analyst | Research Management | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Assistant Project Manager | Research Management | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Assistant Project Manager | Research Management | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Principal Engineer | Research Management | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Choose an item. | Choose an item. | | | | | |
| | | | **Total** | | **[REDACTED]** | | **[REDACTED]** | **[REDACTED]** |

**Work Delivered by Sub-Contractor(s)**

We recognise that suppliers may fit into multiple categories, please choose the drop down that categorises the supplier by the definition that is lowest on the list (i.e. a Defence Supplier Academic would be treated as an Academic.

*Please insert/delete rows as necessary*

| Name of Sub-Contractor | Supplier Type | Activity Description | Rate (£) | Total Hours | Total Cost (£) |
|---|---|---|---|---|---|
| **[REDACTED]** | SME | **[REDACTED]**– Project Management activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**- Technical Lead activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**- Training and customer support activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**– Training and customer support activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**– Technical Author activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**– Production Engineering activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | **[REDACTED]**– Production Engineer | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Hardware – Engineering activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Mechanical – | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |

| | | | | | |
|---|---|---|---|---|---|
| | | Engineering activities | | | |
| **[REDACTED]** | SME | TBC PCB – Engineering activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Support – Training and customer support activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC SW Embedded – Software Engineering activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Train – Training and customer support activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Systems – Engineering activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | SME | TBC Production – Manufacturing activities | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| | Choose an item. | | | | |
| | | | **Total** | **[REDACTED]** | **[REDACTED]** |

**Travel, Subsistence, Materials & Equipment**

*Please insert/delete rows as necessary*

| Supplier Name | Spend Type | Description / Rationale | Unit Cost (£) | Qty | Total Cost (£) |
|---|---|---|---|---|---|
| **[REDACTED]** | Other | Signal Source Module | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Other | Low Power Amp Pack | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Other | Medium Power Amp Pack | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Other | High Power Amp Pack | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| **[REDACTED]** | Other | Antennas & Misc | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |

| | | | | | |
|---|---|---|---|---|---|
| [REDACTED] | Road Travel | Ad hoc meetings as req'd | [REDACTED] | [REDACTED] | [REDACTED] |
| | | | | **Total** | [REDACTED] |

## Core Work – Milestone breakdown costs

**Proposed Milestones Payments**

*Your TMS bid costs shall be included in milestone 1.*

*The final Milestone must reflect the actual cost of the deliverable, and be greater than 20% of the Task value, unless otherwise agreed with your Commercial POC*

*Please duplicate the template per milestone table format below as necessary, and rename milestone number accordingly.*

**Milestone 1**

| Description | TMS cost (£) | Self-Delivery cost (£) | Sub-contractor cost (£) | Total milestone cost (£) | Milestone due date | DEFCON |
|---|---|---|---|---|---|---|
| [REDACTED] | [REDACTED] | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| Travel/Subsistence | | | | | | |
| Materials/Equipment | | | | [REDACTED] | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | [REDACTED] | | | | | |

**Milestone 2**

| Description | TMS cost (£) | Self-Delivery cost (£) | Sub-contractor cost (£) | Total milestone cost (£) | Milestone due date | DEFCON |
|---|---|---|---|---|---|---|
| [REDACTED] | [REDACTED] | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| Travel/Subsistence | | | | | | |
| Materials/Equipment | | | | [REDACTED] | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | [REDACTED] | | | | | |

**Milestone 3**

| Description | TMS cost (£) | Self-Delivery cost (£) | Sub-contractor cost (£) | Total milestone cost (£) | Milestone due date | DEFCON |
|---|---|---|---|---|---|---|
| [REDACTED] | [REDACTED] | | [REDACTED] | [REDACTED] | [REDACTED] | [REDACTED] |
| Travel/Subsistence | | | | [REDACTED] | | |
| Materials/Equipment | | | | [REDACTED] | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | [REDACTED] | | | | | |

| Milestone 4 | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | **TMS cost (£)** | **Self-Delivery cost (£)** | **Sub-contractor cost (£)** | **Total milestone cost (£)** | **Milestone due date** | **DEFCON** |
| **[REDACTED]** | **[REDACTED]** | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| Travel/Subsistence | | | | **[REDACTED]** | | |
| Materials/Equipment | | | | | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | **[REDACTED]** | | | | | |

| Milestone 5 | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | **TMS cost (£)** | **Self-Delivery cost (£)** | **Sub-contractor cost (£)** | **Total milestone cost (£)** | **Milestone due date** | **DEFCON** |
| **[REDACTED]** | **[REDACTED]** | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| Travel/Subsistence | | | | **[REDACTED]** | | |
| Materials/Equipment | | | | | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | **[REDACTED]** | | | | | |

| Milestone 6 | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | **TMS cost (£)** | **Self-Delivery cost (£)** | **Sub-contractor cost (£)** | **Total milestone cost (£)** | **Milestone due date** | **DEFCON** |
| **[REDACTED]** | **[REDACTED]** | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| Travel/Subsistence | | | | **[REDACTED]** | | |
| Materials/Equipment | | | | | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | **[REDACTED]** | | | | | |

| Milestone 7 | | | | | | |
|---|---|---|---|---|---|---|
| **Description** | **TMS cost (£)** | **Self-Delivery cost (£)** | **Sub-contractor cost (£)** | **Total milestone cost (£)** | **Milestone due date** | **DEFCON** |
| **[REDACTED]** | **[REDACTED]** | | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** | **[REDACTED]** |
| Travel/Subsistence | | | | **[REDACTED]** | | |
| Materials/Equipment | | | | **[REDACTED]** | | |
| | | | | | | |
| **Milestone LMS recovery (£)** | **[REDACTED]** | | | | | |

# Tasking Form Part 3:

*To be completed by the Authority's Commercial Officer and copied to the Authority's Project Manager.*

| ***1.*** **Acceptance of Contract:** | | |
|---|---|---|
| **Authority's Commercial Officer** | Name | **[REDACTED]** |
| | Tel | **[REDACTED]** |
| | Email | **[REDACTED]** |
| | Date | 31/10/2022 |
| **Requisition Number** | | **[REDACTED]** |
| **Contractor's Proposal Number** | | **[REDACTED]** |
| **Purchase Order Number** | | **[REDACTED]** |
| **Signature** | | **[REDACTED]** |
| *Please Note: Task authorisation to be issued by the Authority's Commercial Officer or Contract Manager. Any work carried out prior to authorisation is at the Contractor's own risk.* | | |